VOL. XLV. No. 2 FEBRUARY 1960

MECCANO MAGAZINE

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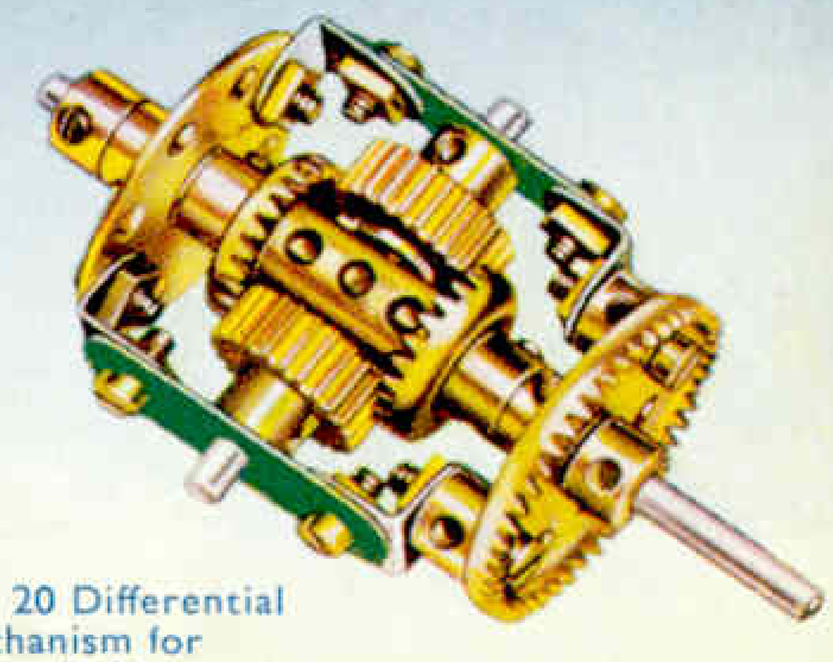

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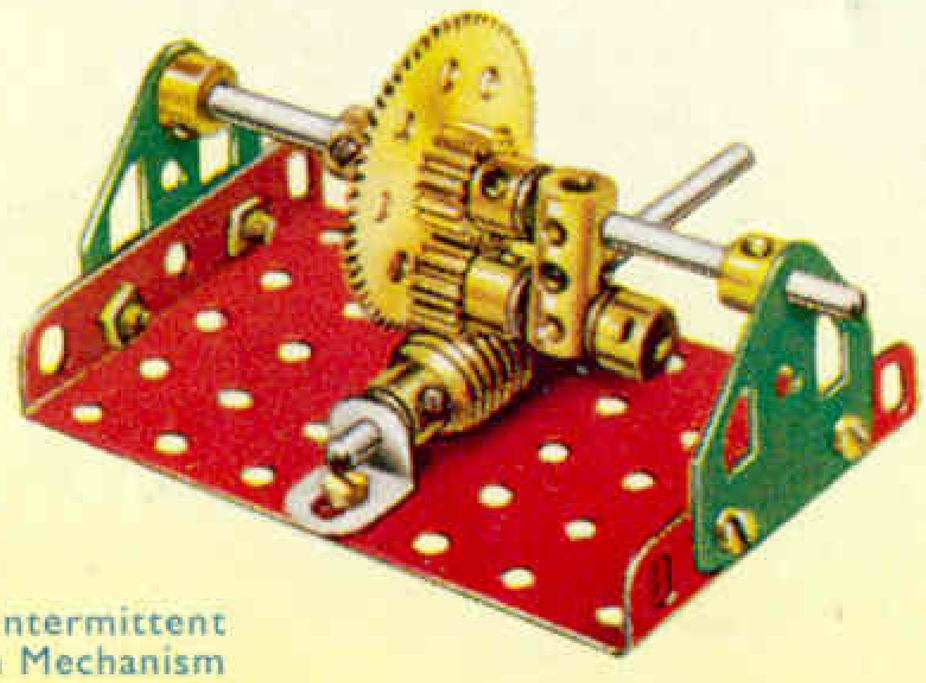
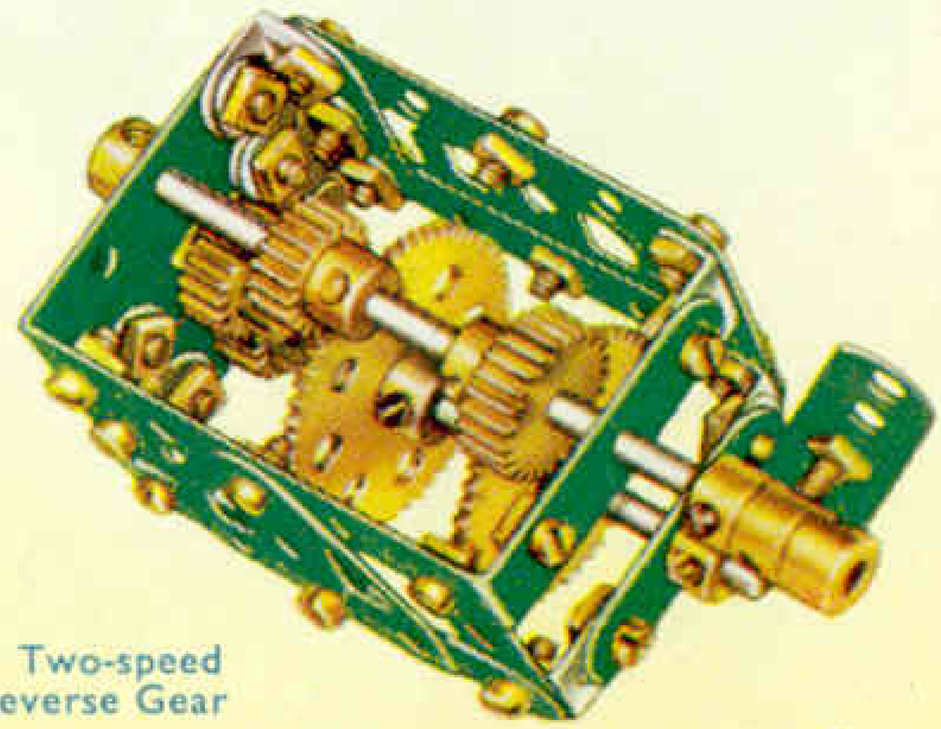


No. 5 Intermittent Motion Mechanism



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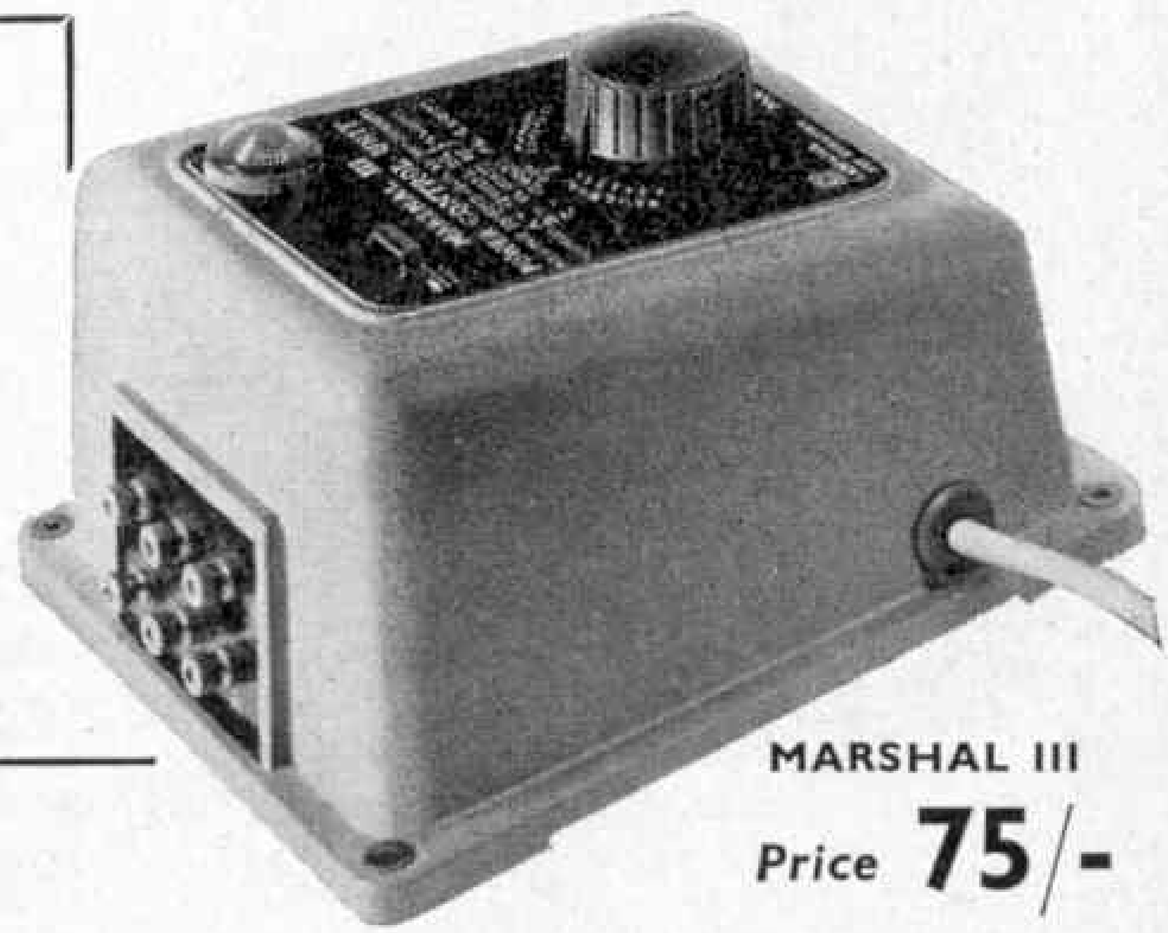

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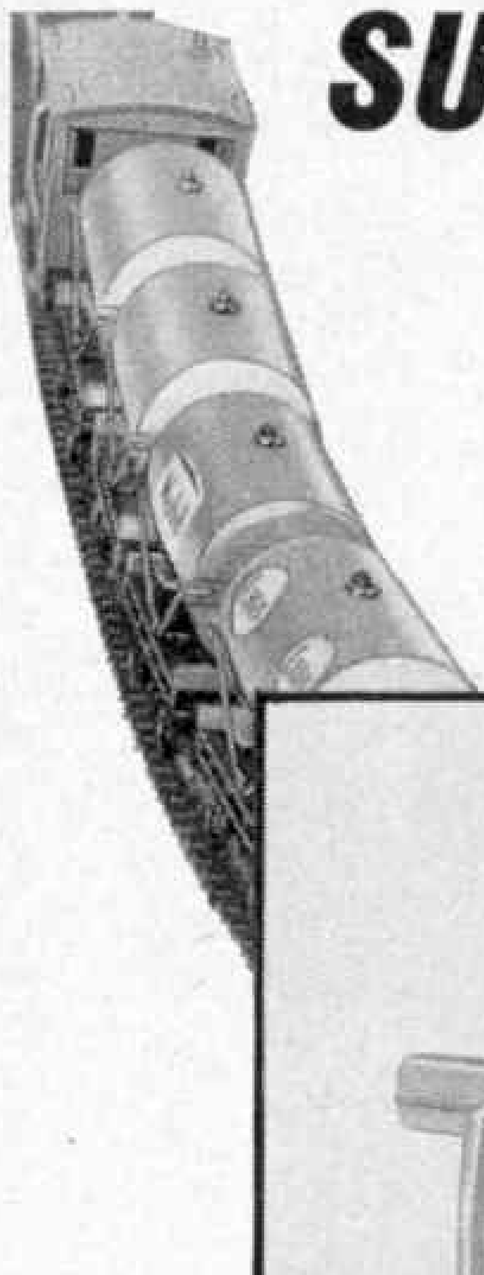

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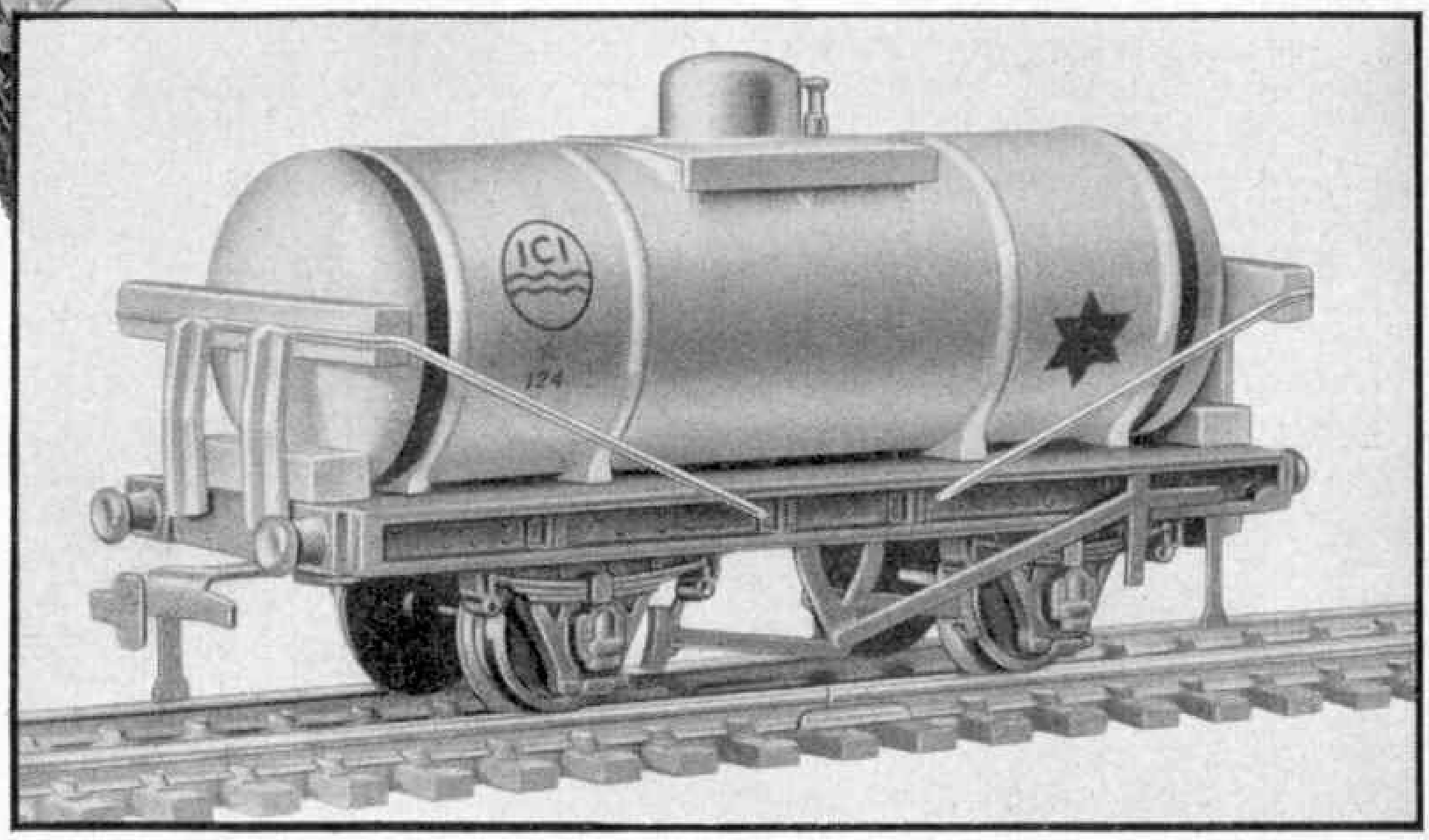

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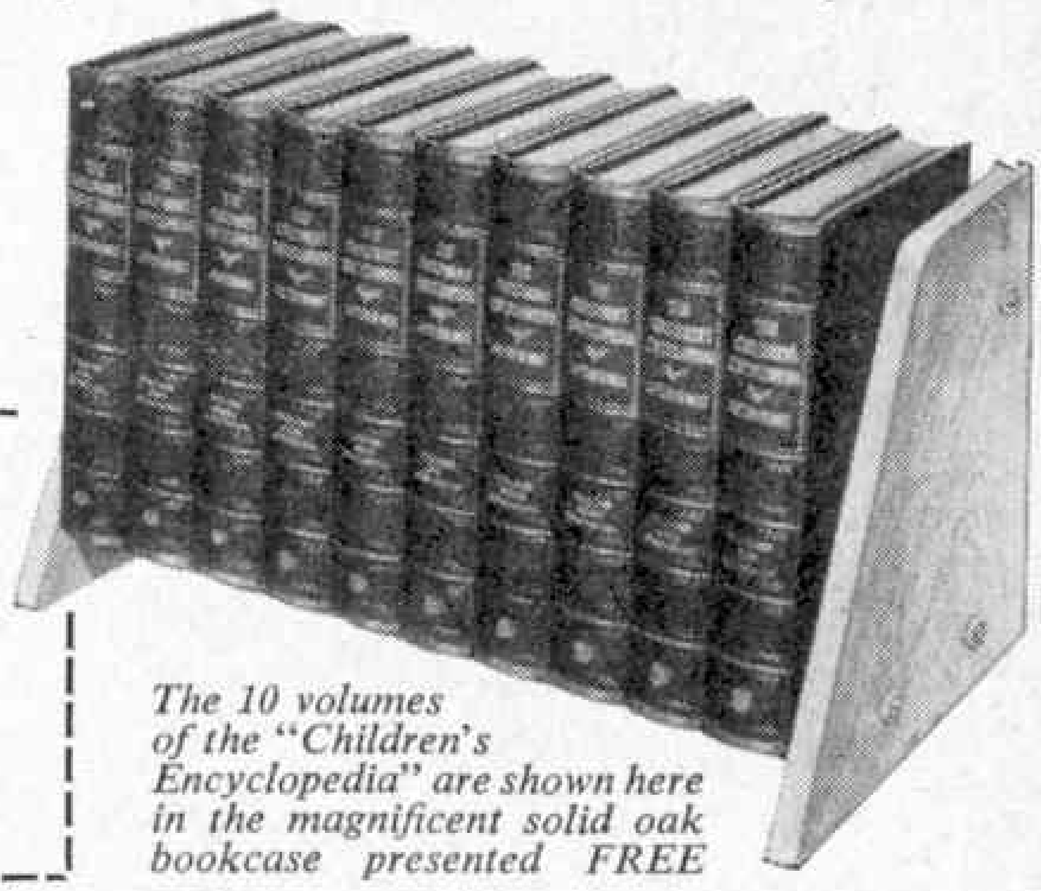

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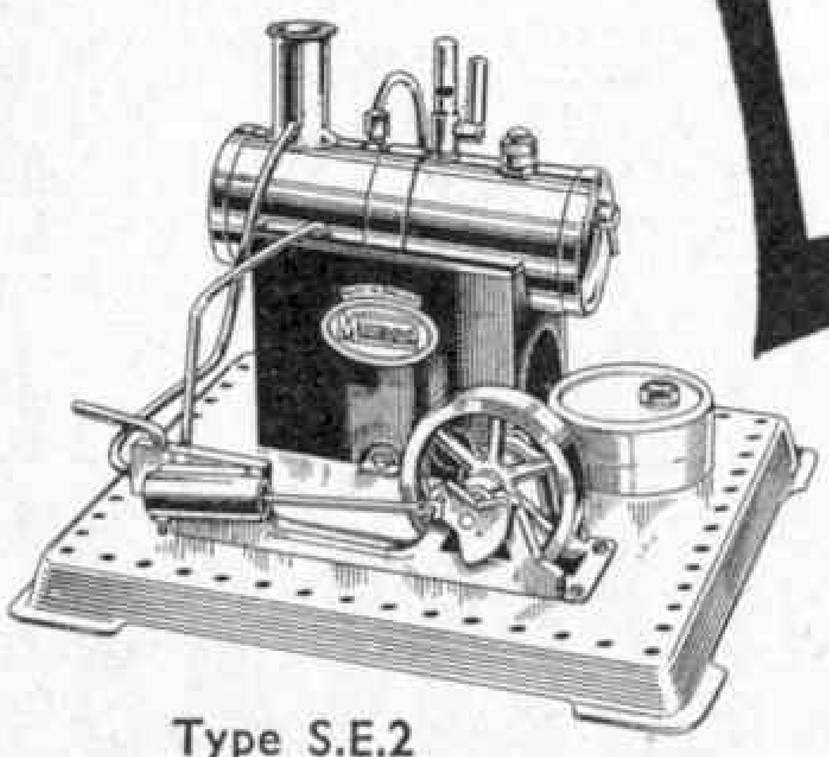

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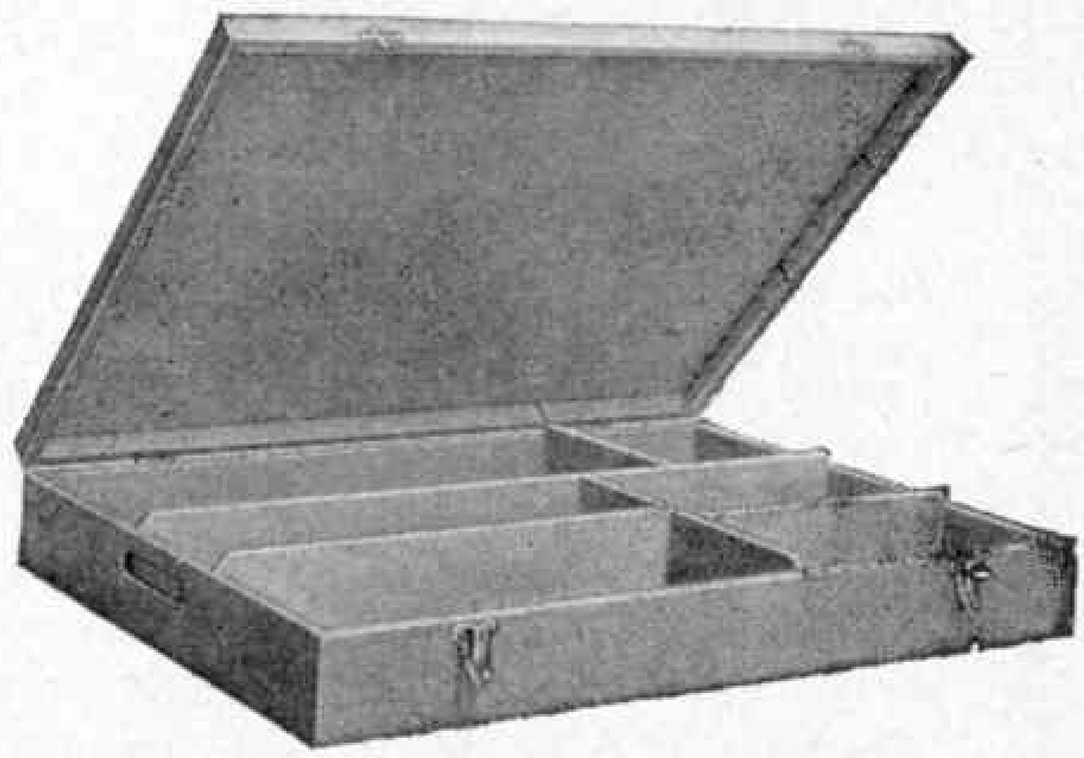

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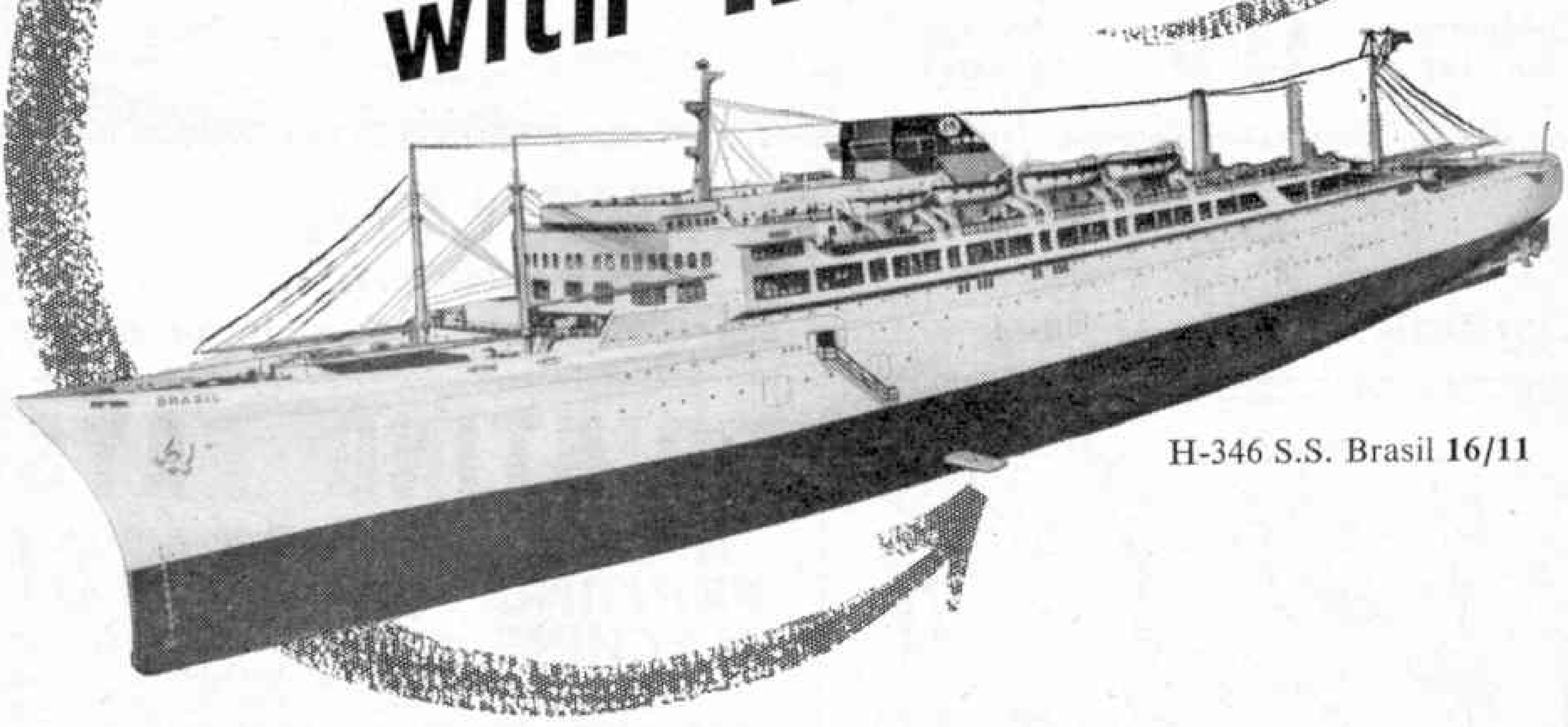

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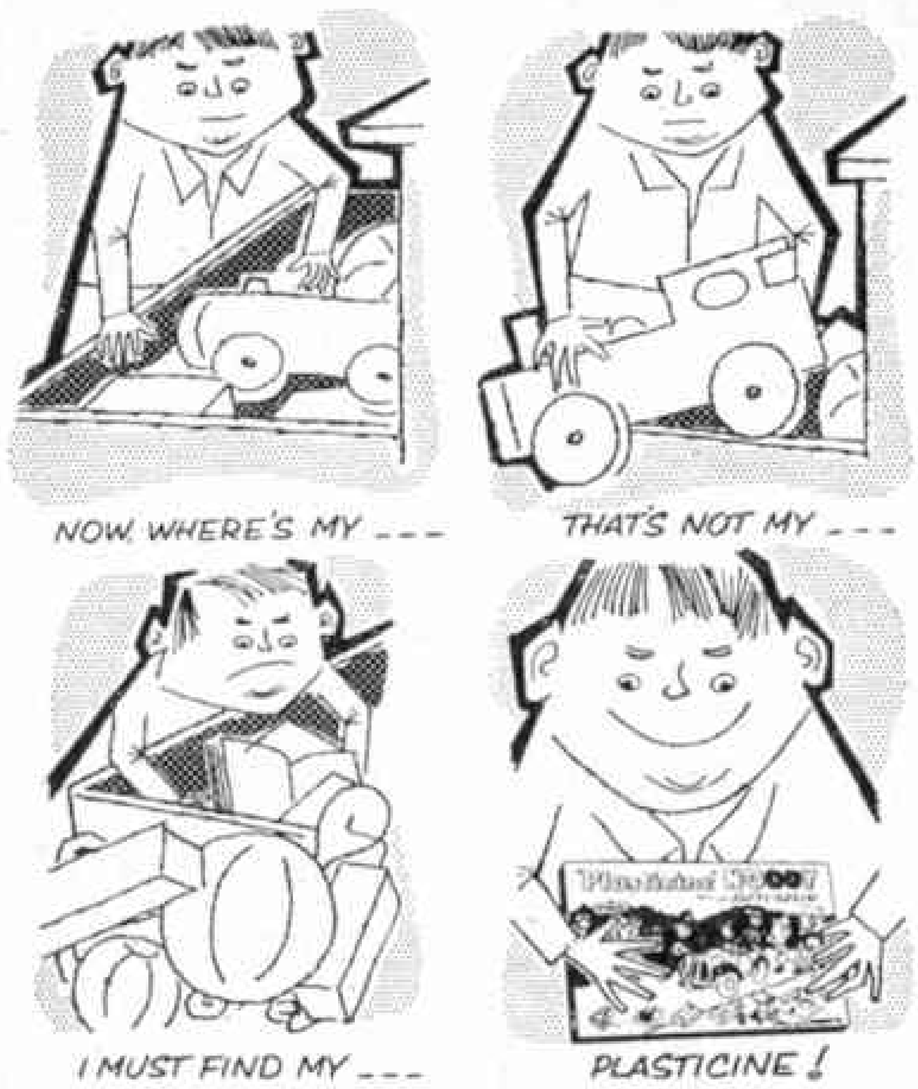

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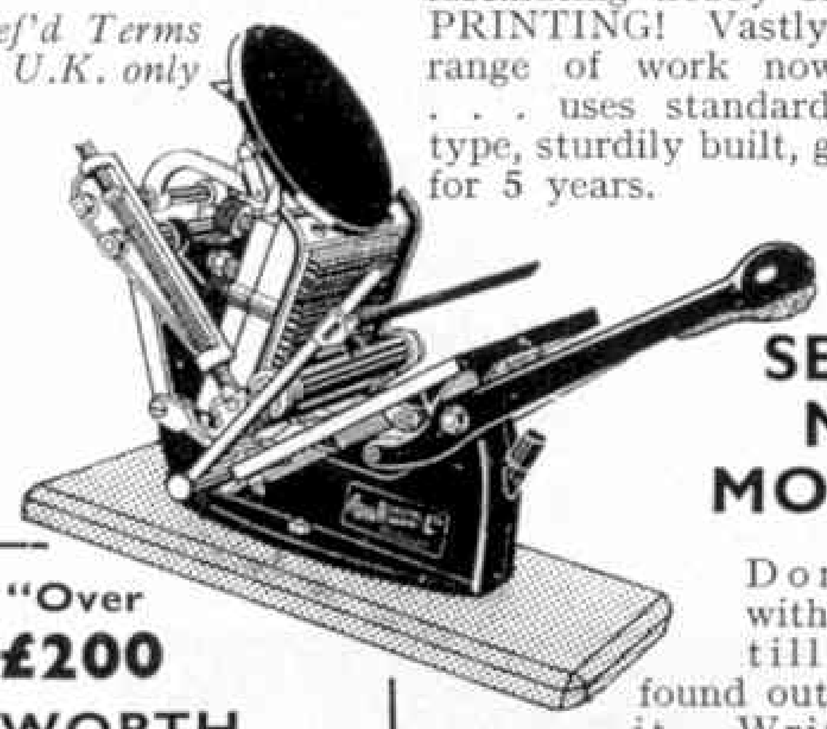

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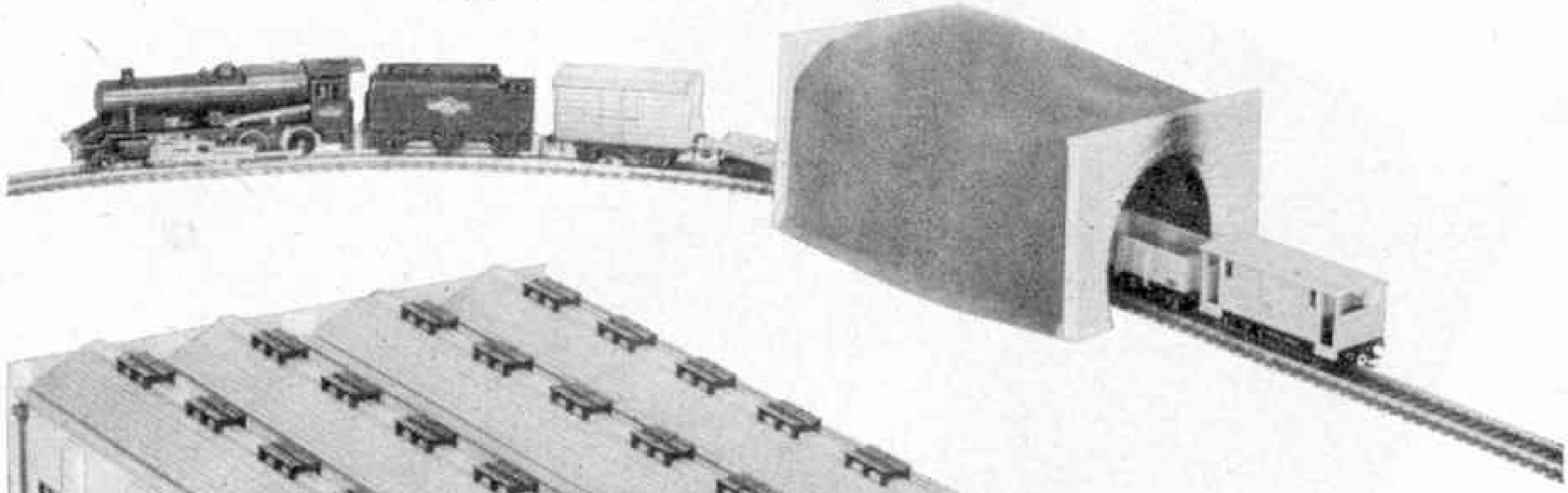
No model railway is complete without tunnels, and this new Hornby-Dublo Tunnel (moulded in high-impact Polystyrene) adds a touch of authenticity to any layout—large or small. The ends represent brickwork as seen on most tunnel faces. This model (seen in the picture below) measures $8\frac{11}{16}$ in. in length and is suitable for single track. Price **9/11** (inc. Tax)



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Many new Hornby-Dublo accessories have just been introduced to make your "00" Gauge railway more like the real thing than ever. Several of these are in kit form like the Engine Shed in the above scene. This item really is a must. It is modelled on a real engine shed at Chester, and is wonderfully accurate even to the smoke on the roof end panels! It can be assembled in under two minutes and is glazed on roof and sides.
The four-road Shed in the picture is made up of 5005 Engine Shed Kit, and 5006 Engine Shed Extension Kit, priced at **17/9** and **12/6** respectively (**30/3** in total inc. Tax).

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Next Month: LAUNCH OF THE "ORIANA"

MECCANO MAGAZINE

Editorial Office:
Binns Road
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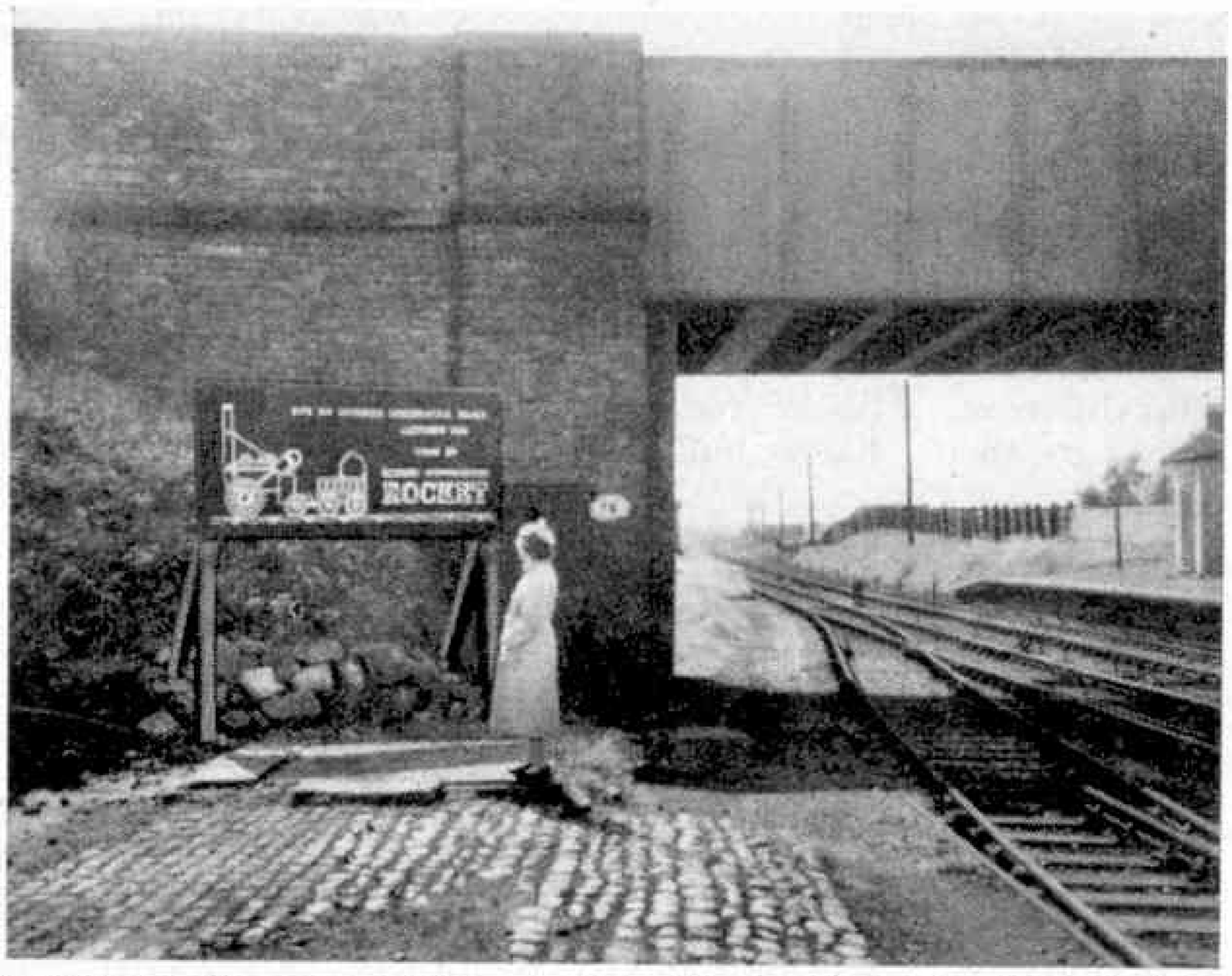
England

Vol. XLV
No. 2
February 1960

Links with "Rocket"

YOU will by this time have seen that my picture this month is a memorial of one of the greatest and most exciting events in the story of railways. This was the victory of *Rocket* in the trials at Rainhill, which answered decisively the question as to whether railway trains would be hauled by steam locomotives or by stationary engines.



A reminder of a great railway occasion—the Rainhill trials. Photograph by C. R. Rowson, Liverpool 12.

The sign illustrates *Rocket* itself, the most famous of all locomotive steam engines, and the wording on it reads "SITE OF RAINHILL LOCOMOTIVE TRIALS, OCTOBER, 1829, WON BY GEORGE STEPHENSON'S ROCKET."

I had another reminder of the Rainhill trials only just before writing these words, when I learned that Liverpool Road Station, in Manchester, is now listed as a building that cannot be demolished without notice being given to the Manchester Corporation. This means that one of the earliest railway stations in the world is to be preserved, for it was the Manchester terminal of the original Liverpool and Manchester Railway, built by George Stephenson, on which the trials were run.

The station has not been used for passenger trains since 1844. Today it is a goods depot, but it is visited by people from all over the world, who can still see the booking office of the station, which did not have a platform, and the bell that was used to announce the arrival and departure of the earliest trains of the Liverpool and Manchester Railway.

Liverpool Road, Manchester, did not become the terminal of a great railway system, as did Paddington in London for instance. This was opened in 1839, when Great Western Railway trains began to run from it, and was moved to an adjacent site in 1854. The station figured on the cover of the December issue of the *M.M.*, the Nativity scene in which represents the Christmas decoration of the station in a previous year. Many readers recognised the scene, and others wrote to ask me about it.

The Editor

How Railways Fight Snow

By W. Hubert Foster

YOU must often have stood at your door or window on a dull winter morning and watched the endless curtain of gently falling snow flakes, slowly transforming, as though with a magic touch, your garden or street into something out of a fairy tale book.

Those apparently harmless and beautiful flakes are being observed with a far different interpretation by other eyes. These are the eyes of the men in the several control offices of our British Railways system, who are responsible for keeping traffic moving in a smooth flow, according to laid out timetables and with a minimum delay. To them snow means trouble; even a moderate fall can play havoc with train schedules.

At the head of the page is a railway scene in winter. Snow covers the landscape, but the rails at least have been cleared and the presence of the inspection saloon and engine shows that the District Engineer is about, seeing how things are going on. What has to be done when the snow thickens is explained in this article, with special reference to the Settle and Carlisle line of what is now the Midland Region. Photographs, including that on which our cover is based, by the author.

When snow threatens, permanent way men at once see to it that stocks of salt are adequate near to junctions, yards, etc., and the moment snow begins to accumulate, this is scattered on all moving parts, points, rodding, pulleys and signals. For when sleet or snow freezes as the thermometer drops, all moving metal parts can be quickly welded into a hard glassy mass. Point blades, too, can be prevented by packed snow from closing properly.

In the running shed, drivers make doubly sure that the sand boxes of their locomotives are well filled, for even a thin layer of snow on the rails can bring trains to a stand on a gradient. In districts where lightweight diesel units are operating, very often a steam engine is sent along the tracks to clear and sand the rails between trains.

As darkness falls, other troubles start. Snow freezes to telegraph wires, and other flakes building up on these cause wires to begin to sag. Then, perhaps, one breaks. This may well be a vital wire connecting the electrical locking mechanism of a home signal, preventing it from being cleared. This causes more delay, due to the fact that all trains on that section have to be stopped, and the drivers informed and their trains flagged through by hand.

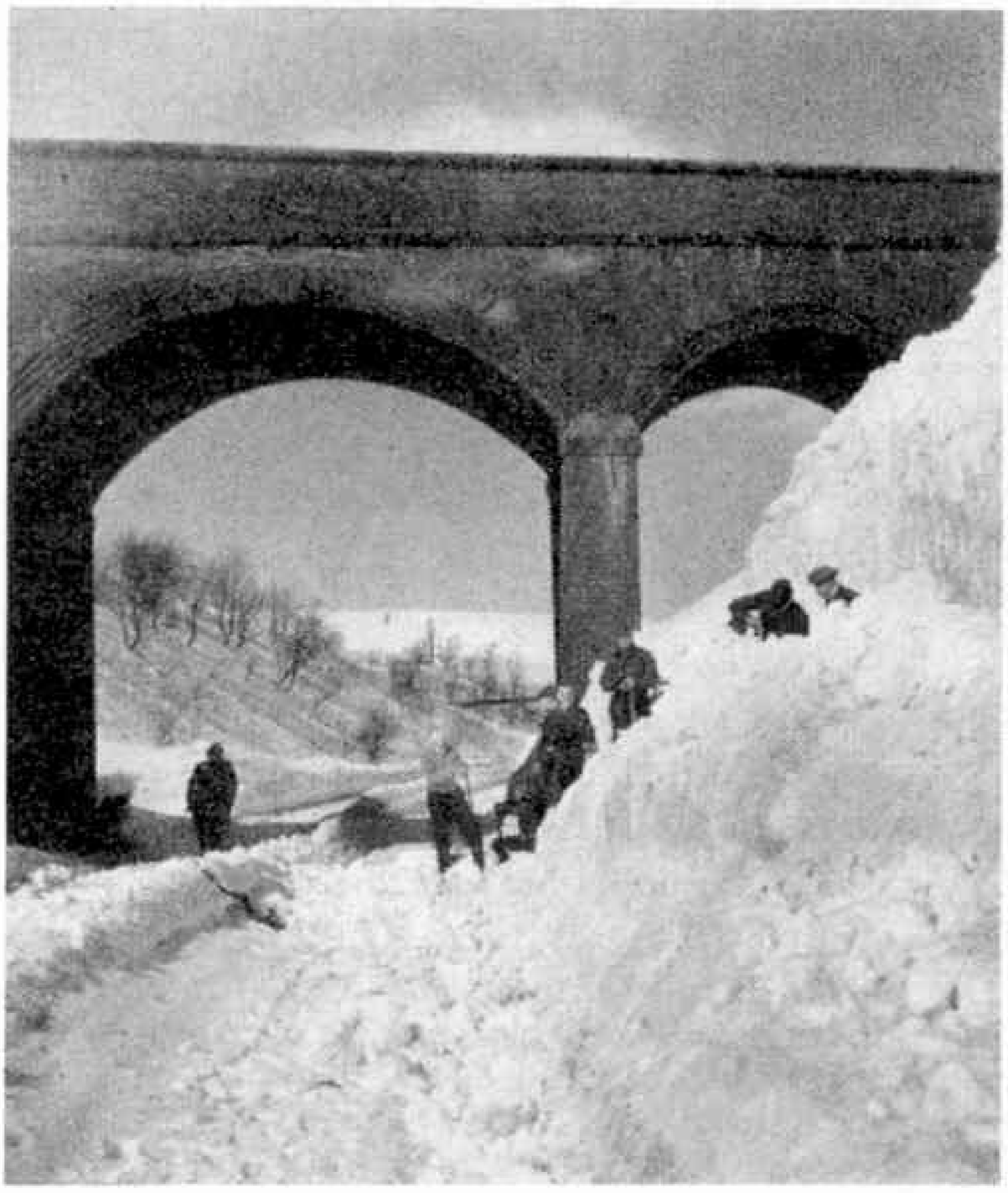
Back in the running shed word is received that snow and freezing conditions may last all night. At the main depot, the District Motive Power Superintendent will now probably decide to fit steam defreezers on one or more suitable locomotives. These are pipes fitted across the front and rear of a locomotive, which have a number of holes drilled in them in positions over the running rails. Through these high pressure steam can be blown vertically down on to the track

to melt snow and ice off rails, points, etc.

Other engines may be fitted with a steam lance. This equipment comprises a length of insulated metal tubing, with about 16 feet of armoured flexible hose attached. This in turn is connected to the steam tube cleaning valve, on the side of certain engine smoke-boxes. The man operating this steam lance can vary the amount of steam by a trigger control. These lances are most useful as they can be used on lineside apparatus, several yards away from the track, the engine moving up to the nearest point for the purpose. When mechanisms have been freed by this method, salt can be applied to prevent further freezing.

In blizzard conditions it is a different story, especially on those high and exposed stretches of line in the North of England and in Scotland. On some of these, trains have become fast in a snowdrift and almost buried overnight. When there is danger that these severe conditions may occur, special precautions are at once taken. Many engines are immediately fitted with heavy snowploughs and kept in instant readiness at strategic depots.

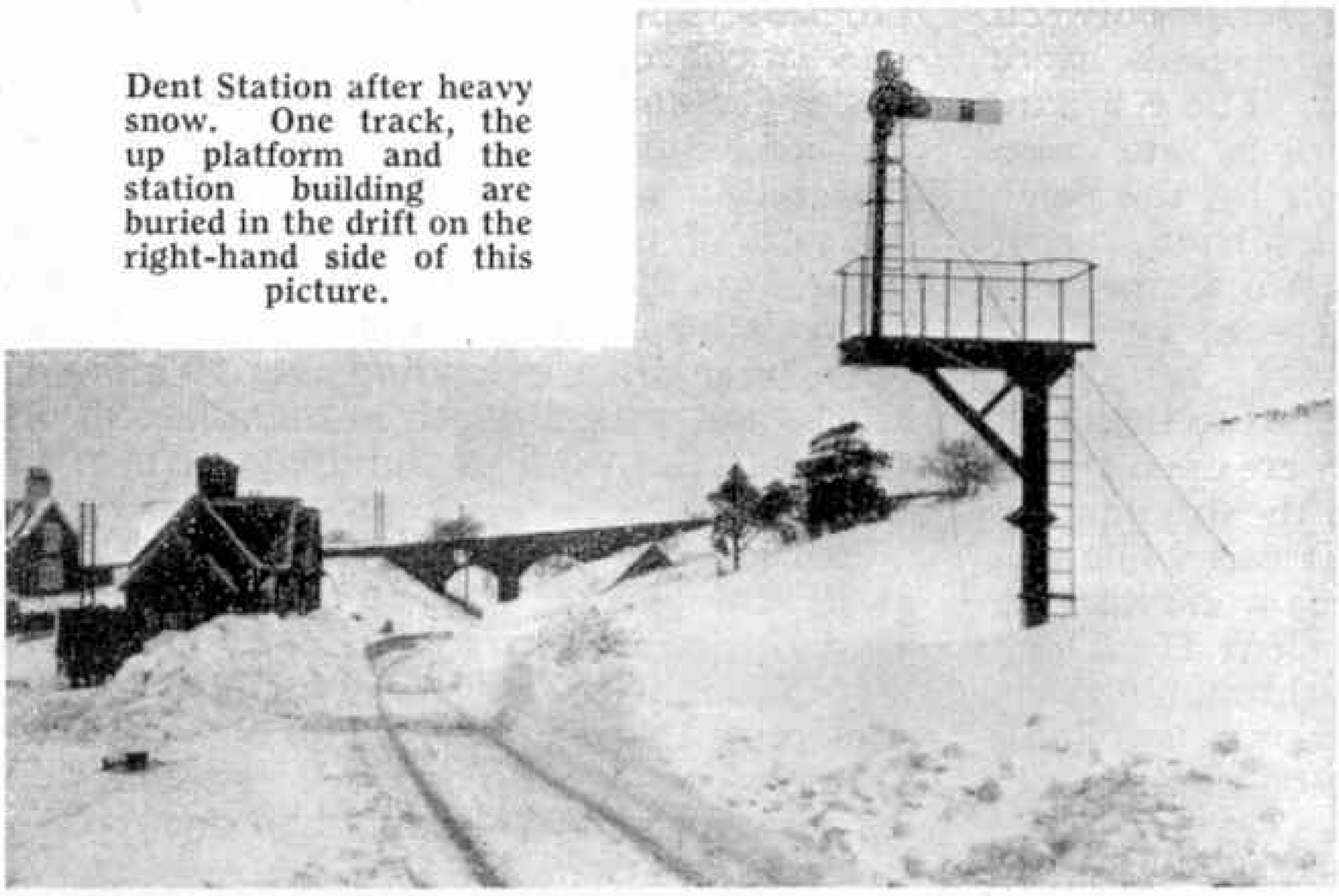
Small steel snowploughs are also fitted to other locomotives as they go out into regular service. The small ploughs fit below the buffer beams clear of rolling stock. Breakdown gangs are put on call and all other railwaymen alerted so that they will be ready to be called out if required. Special snow clearing trains are made up to transport the men and tools to where a blockage occurs, and included in these trains are canteen vans in order that meals and hot drinks can be served on the spot.



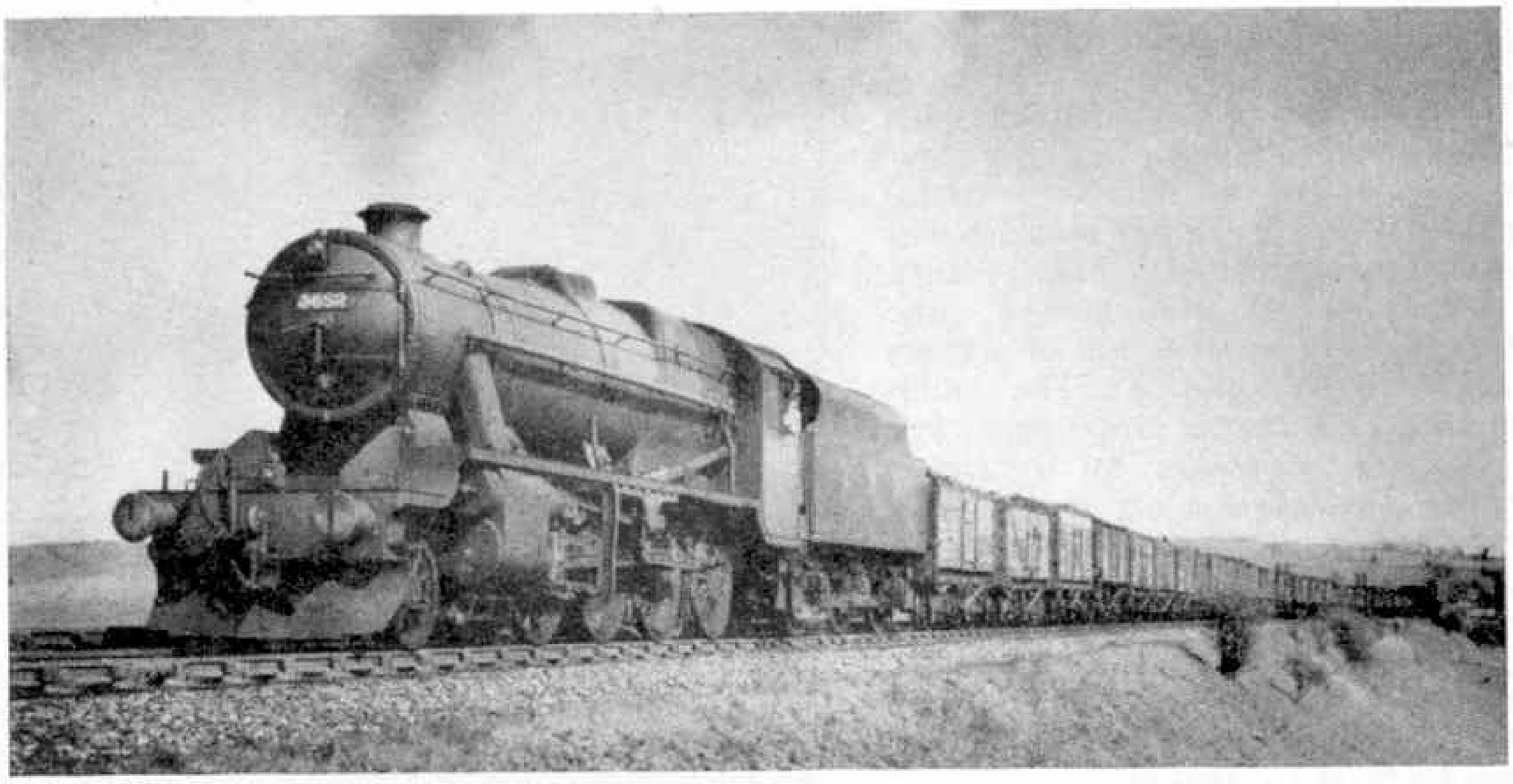
Clearing the cutting near Dent Station on the Settle and Carlisle line, where drifts have built up to a considerable height.

Heavy ploughs take to the tracks the moment the blizzard strikes, keeping up a constant service between trains over the sections where heavy drifts are most likely to be met with. As many light engines as possible also are kept on the move in the same area, the main effort being to prevent the building up of deep drifts by constantly demolishing the small ones. Heavy trains are double-headed, and when this is not possible, they are divided into two, so halving the load. Loose coupled heavy mineral and similar trains are shunted into sidings clear of the affected area. Engines from these trains can then be used to help other faster or more important ones.

Sometimes, though, in spite of every available man, engine and plough being put on the job, Nature gains the upper hand.



Dent Station after heavy snow. One track, the up platform and the station building are buried in the drift on the right-hand side of this picture.



In winter, when snow threatens, locomotives may be fitted with small snow ploughs.

Thousands of railwaymen will never forget the winter of 1947, when scores of trains were brought to a stand through becoming stuck or derailed by drifting snow. Some lines were blocked for weeks on end, and on the line between Darlington and Kirkby Stephen, where it crosses Stainmoor, a train was actually completely buried for days.

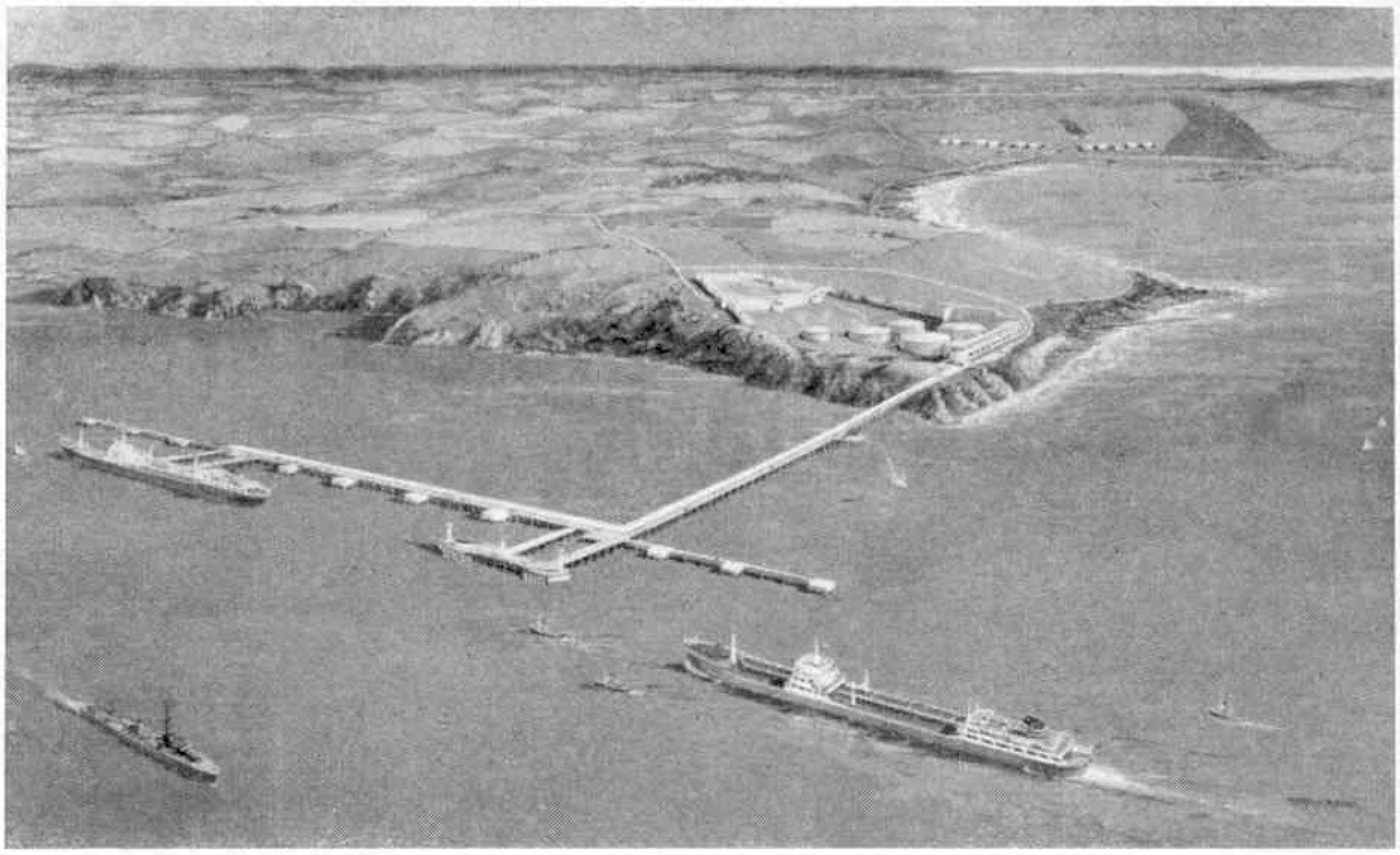
Perhaps the most serious blockage of all was that which occurred very early in February between Dent Head signal box and Kirkby Stephen, on the London Midland region main line to Carlisle and Scotland. Light powdery snow commenced to fall on the 2nd of the month. By next day this had turned to a raging blizzard. Snow ploughs had already been put into operation, and kept the line open until the 4th. On that day a freight train from Carlisle to Ancoats was held between Aisgill and Dent, because signals were frozen in the "on" position. The 8.3 a.m. passenger train from Carlisle was also brought to a halt at Aisgill by the same causes. Very quickly the driving snow accumulated around these two trains, and in a very short time they were well and truly fast.

Men and ploughs were rushed to their aid, and by next day both lines were open again; the respite was brief, for on the 8th another freight train was caught. It was while this train was being freed that the worst disaster of all occurred. Between Dent Head and Dent Station the line runs through a deep, half-mile long cutting, known as Shale Cutting. Here snow had been piling into a great drift, overhanging the cutting in the form of a huge cornice. Suddenly and without warning this collapsed, and thousands of tons of hard packed snow cascaded on to the track below, with the consequence that heavy ploughs and a ballast train were trapped, and had to be abandoned until the 10th, when a lull in the storm allowed workers to free one engine.

Not so on the 11th, when conditions again became so terrible that digging had to be quickly abandoned everywhere. Hellifield breakdown gang, working to re-rail an engine, got away with their train and equipment only in the nick of time, or they too would have been in a sorry plight. Next day Nature repented and so good was the progress by man that four locomotives and ploughs were freed and taken to Hellifield. Between the 13th and 18th, in spite of several snowploughs derailed, progress continued, and by the 19th, the line was repaired and open to local passenger and through goods trains.

Then, until 25th February, all went reasonably well, but at noon that day a blizzard of unprecedented violence roared down from the fells. This continued without a break for 48 hours, and by noon of the 27th, huge drifts extending over 10 miles of track, and with a depth in one place of 30 feet, put the work of hundreds of men to nought.

Sections of track previously unaffected were now blocked. In an all-out effort to beat this white terror, hundreds more men were brought to the area by special trains, including British Army units and German prisoners of war. Good days were followed by bad ones, and no sooner had one section been cleared than *(Continued on page 108)*



Milford Haven — Port of the Future

A Deep Water Terminal for Oil Tankers

By L. Bruce Mayne

MILFORD HAVEN, the 22-mile-long inlet in Pembrokeshire, is Wales' port of the future. For centuries it has been a place of arrival and embarkation. In August 1485 Henry Tudor arrived in the Haven on his way to the battle of Bosworth and the throne of England. Later Lord Nelson thought it "the finest and most extensive harbour in the known world."

Less than a century ago, there were plans to make the Haven a trans-atlantic terminal, rivalling Liverpool and Southampton, a scheme that was abandoned. There was too a grandiose scheme for building a railway from Manchester to Milford Haven, to bring the products of the busy industrial area of Lancashire to the port. This also failed. Only 42 miles of the line, in the middle of Wales, were ever constructed, and this section is now part of the Western Region of British Railways.

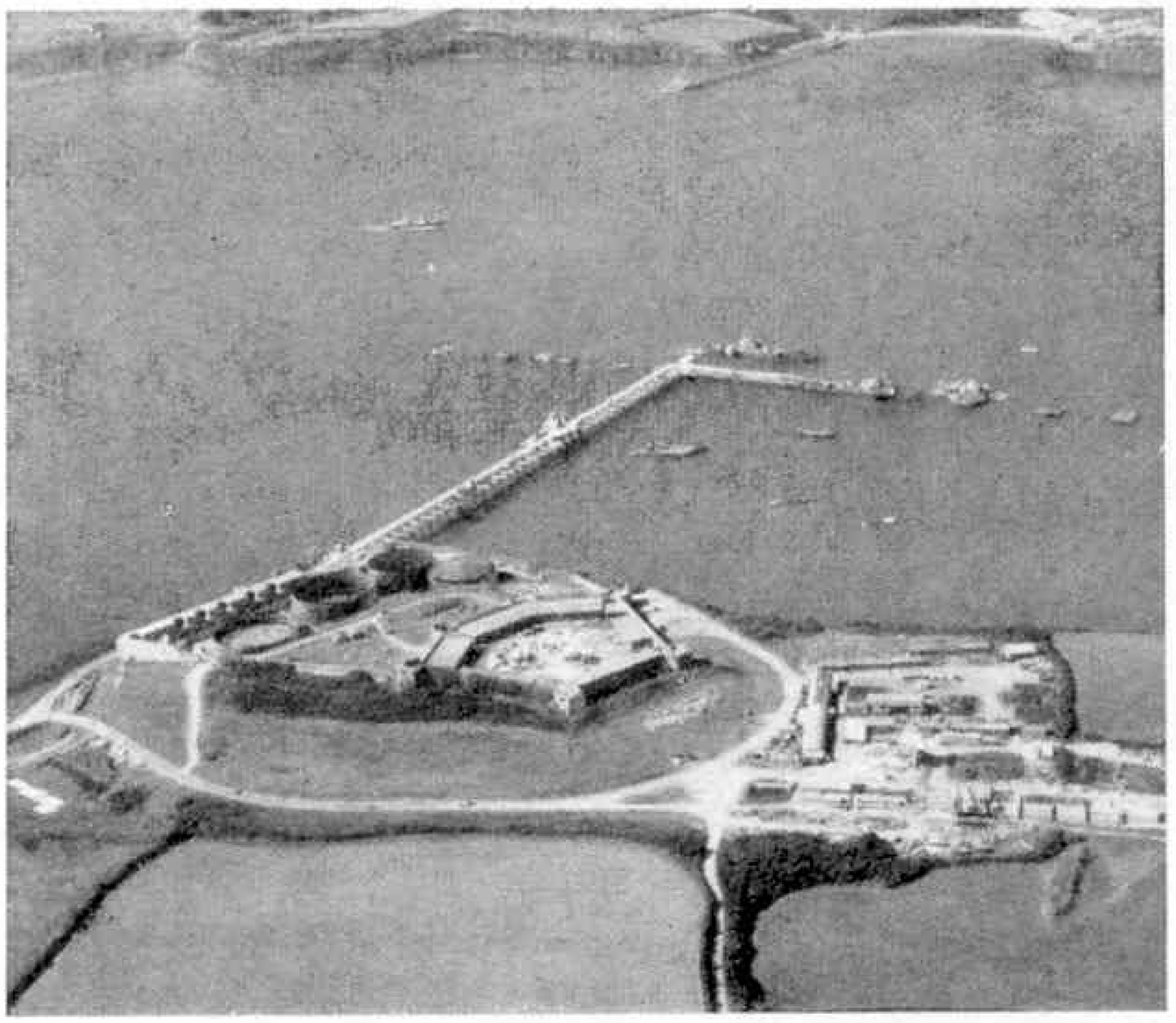
During the two World Wars the Haven was used as a naval base and rendezvous for shipping convoys. In the second one there was also an R.A.F. Coastal Command station there, from which Sunderland aircraft carried out anti-submarine patrols in the Western Approaches.

After each of these world crises Milford's brief periods of prosperity declined. Now, however, a major European oil port is being created there through a £40,000,000 development project.

At the top of the page is an artist's impression showing what the British Petroleum Company's oil tanker terminal on the south shore of Milford Haven will look like when completed. B.P. photograph.

The Haven has sufficient depth of water at all states of the tide to accommodate ships of 100,000 tons and more, while Milford Docks can supply berths for ships of 10,000 tons. At the end of the Dock Company's second phase of expansion it will accommodate ships of 100,000 tons for repair and for the discharge of general cargo. At present the larger ships are handled by lighters in the Haven outside the dock gates, where as many as fifty ships have lain at one time.

The geographical position of the Haven also is important. It is actually the nearest great harbour in Great Britain to the American continent.



The B.P. oil tanker terminal under construction, from a photograph taken in August of last year. B.P. photograph.

In 1948 the British Petroleum Company discussed building a tanker terminal and tank farm at Milford Haven. It was foreseen that oil tankers would steadily increase in size and that Swansea Docks, where crude oil is now discharged and pumped to the company's refinery at Llandarcy a few miles away, would not be able to accommodate these super-tankers.

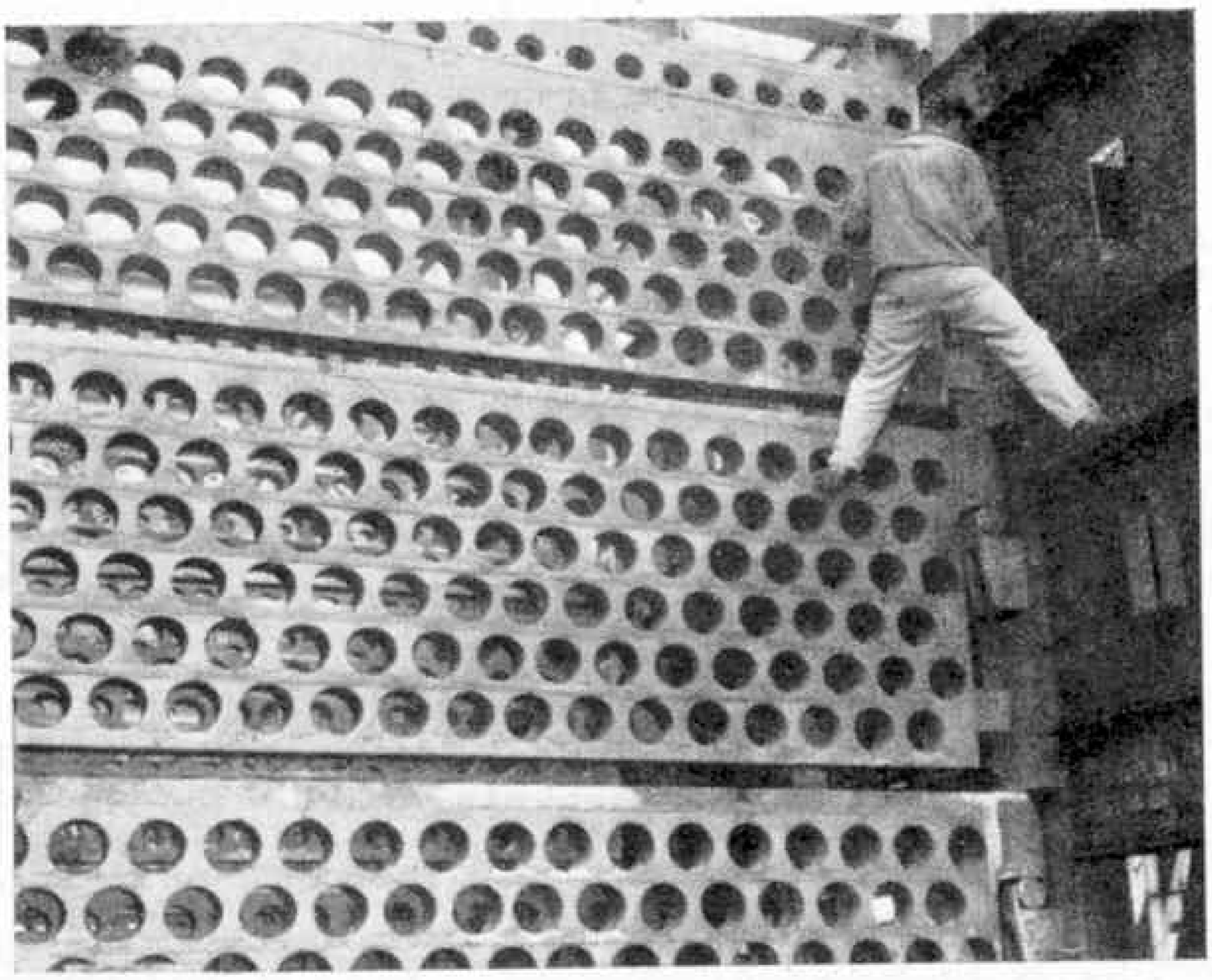
There are only a few tankers of 50,000 or 60,000 tons afloat at present, but the time is not far distant when ships of this size, and even bigger ones, will become a more usual sight on the sea routes of the world. Fully-laden, these ships draw more than 45 ft. of water, a depth that very few ports in all Europe can offer. With the realisation of the advent of the super-tanker, the British Petroleum Company began a search for deep-water terminals for its tanker fleet. Two sites were finally selected. These were Finnart, on Loch Long in Scotland, where a terminal was completed in 1951, and Angle Bay in Milford Haven.

The cost of the B.P. project at Milford will be about £5,000,000. It was begun in January 1958 and is scheduled for completion early in 1960. A pier runs out from the mainland for 1,350 ft., with a jetty 2,300 ft. long at its end, running at right angles to it, that will provide two berths, each 55 ft. deep, at low tide.

The pier and jetty are of open construction to prevent interference with the natural tidal flow, and arrangements have been made to allow small fishing boats to follow their normal inshore passages along the Haven. A pipe track supports two 26 in. diameter pipelines, through which crude oil will be pumped from the tankers by their own pumps to the tank farm nearby. There are also the necessary service lines for ships' bunkers, fresh water, fire-fighting and other services.

The storage tanks, which are situated a mile and a half from the terminal, are of welded steel and have roofs floating directly on top of the oil, thus preventing loss by evaporation. Besides tanks for crude oil, there are tanks for ships' bunker oil and fresh water.

To pump the oil to



Hangers for the tubes in which crude oil is heated to 750 deg. F. in the Esso Refinery. Esso photograph.

Llandarcy refinery, 62 miles away, a pumping station has been built with four electrically-operated centrifugal pumps, each with a capacity of 2,760 gallons per minute. Five million tons of oil a year, it is estimated, will be pumped along the 18 in. diameter pipeline through three counties of South Wales, the longest ever constructed in Britain.

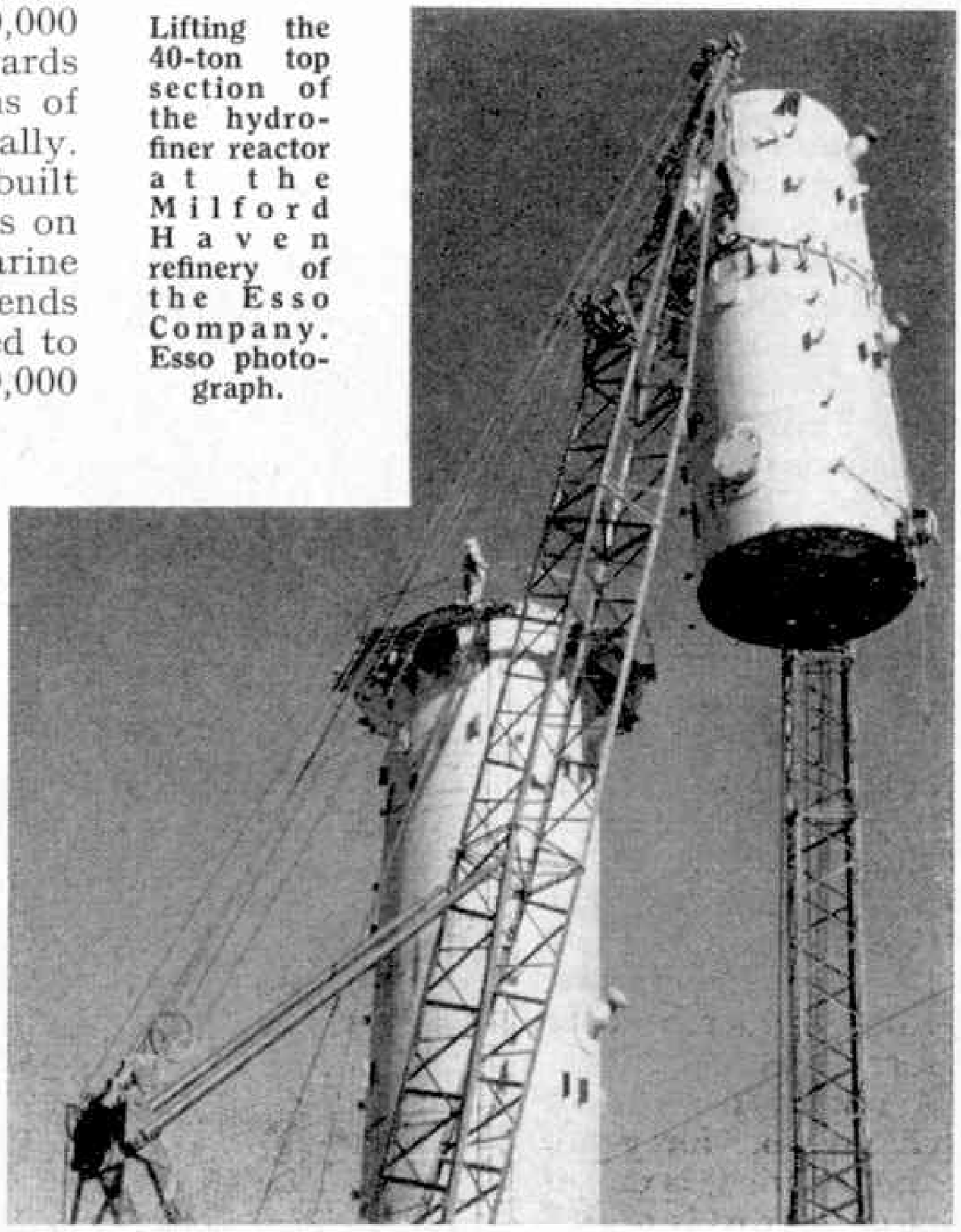
Across the Haven, opposite the B.P. site, the terminal and refinery of the Esso Petroleum Company is taking shape. Over 2,000 men are at work on the £18,000,000 project, which should be completed towards the end of 1960. Then 4,500,000 tons of refined products will be produced annually.

The Esso plant, the second to be built since the war by this company, stands on the north shore of the Haven. The marine terminal, shaped like a "T", extends 3,500 ft. into deep water. It is designed to accommodate two ships of up to 100,000 tons on the outside face and has an inside berth for ships up to 5,000 tons. It is constructed in concrete on 915 piles, some of which are 140 ft. long and weigh 18 tons. Provision has also been made here for small vessels to pass under the pier extending out from the shore.

Distillation of crude oil is the first operation of the many carried out in oil refining. The crude oil at the Milford Haven refinery will be heated to a temperature of about 750 deg F. by the largest furnace of its kind in the world. After heating, the oil is fed into the fractionating tower as a mixture of vapour and liquid. The liquid drops to the bottom while the vapours condense on trays at different levels. In this way as exact a separation as possible is made of the large number of liquid hydrocarbons, which make up crude oil. Once separated, these are the raw materials for manufacturing petrol, jet fuels, heating oils and fuel oils.

An important feature of the refinery is the precautions being taken to avoid pollution of the Haven and the atmosphere. A large reservoir has been constructed into which to pump all the refinery drainage water, which will already have had most of its entrained oil removed. There any oil that remains will be skimmed off before the clean water is pumped out into the Haven. To deal with any emergency release of gas that cannot be burned at the boilers or furnaces, a multi-jet flare of a special Esso design is being installed. This is smokeless, noiseless and non-luminous.

Much of the area where these developments are taking place is noted for its natural beauty. Indeed, about three-quarters of the Esso site is within a National Park. Industrial landscaping and design has ensured that the refinery is not only a clean, compact place, but that it is also integrated with its surroundings. By careful siting, it has been possible to hide most of the plant and tankage in a natural ravine,



Lifting the 40-ton top section of the hydro-finer reactor at the Milford Haven refinery of the Esso Company. Esso photo-graph.

while the parts that are exposed will be painted to blend with the surroundings. Where possible, tree belts are being planted to screen the site, and altogether great skill and foresight have been exercised to avoid spoiling the scenic beauty of the district.

Other projects, apart from those of the oil companies and the Dock Company, include the building of an iron ore terminal and stockyard at a cost of £1,000,000; the possible building of another terminal by National Bulk Carriers, an American company owned by Mr. Daniel K. Ludwig, the multi-millionaire ship-builder and owner of one of the largest tanker fleets in the world; and the construction of a barrage across the river Cleddau to supply water for industries coming to the area.

Road and Track

By Peter Lewis

THE announcement that the slight, dapper Frenchman, Maurice Trintignant will drive an Aston-Martin Formula I car this season came as no surprise. For "Trint", as he is affectionately known in motor-racing, is one of the finest team drivers of today, who can be relied upon at all times to give maximum co-operation in all matters of team strategy and tactics.

He is also one of the steadiest and most reliable drivers in the sport. He drove for Rob Walker in 1959 and finished in every single one of the eight World Championship events, very nearly wresting first place from young Bruce McLaren in the United States G.P. at Sebring. His next best performance was third place in the Monaco G.P., and he was fourth in the German and Portuguese classics. Rob Walker will be sorry to lose him.

The French champion, forty-two and married, is one of the "gentlemen" racing drivers of the old school. Quietly he goes about his non-professional job of motor-racing—he is a vineyard owner by profession—and it is rare for France's "Le Petoulet" to become involved in a "win or bust" effort. Nevertheless, he has achieved some great victories, including sharing the winning car with Gonzalez at Le Mans in 1954, an epic drive in May 1955 to secure first place in the Monaco G.P. and an equally meritorious performance at Monaco in 1957, when he drove Rob Walker's Cooper-Climax to victory. At Sebring he was only 0·6 sec. behind the winner.

Enthusiasts may wonder how Trint will shape up in a Formula I Aston-Martin this season, but they need have no fears. He is no stranger to the *marque*, having driven in sports car races for them, and few will doubt the wisdom of his advice. "Keep going and finish—that is the secret of motor-racing".

It sounds simple, but how many drivers can do so consistently over a season, and put up good performances as well.

Maurice Trintignant—a top-flight driver whose consistency is second to none.

Formula Junior

Those of you who went to Brands Hatch on Boxing Day will have seen the tremendous tussle between the new Formula Junior racing cars which was eventually won by the Elva-Auto Union of Peter Arundell. Undoubtedly this Formula has come to stay and race promotors will feature Formula Junior prominently in their programmes for the 1960 season.

It was at Brands Hatch in August of last year that Formula Junior was introduced to Great Britain, although by this time there had already been several such races on the continent, most of them dominated by the Italian Stanguellini's, powered by Fiat 1,100 engines. It was not until Boxing Day that the majority of British enthusiasts realised that here was an exciting new class of racing, a worthy replacement of Formula 3 and another challenge to the ingenuity of British designers and the skill of British drivers.

There is no reason why we should not lead the world in Formula Junior as well as in Formula 1, Formula 2, Sports Cars and Formula 3.

The regulations for the new formula

Charles Cooper, patron of the "marque" Cooper.

specify single-seater racing cars, the fundamental elements of which are derived from a touring car recognised as such by the Federation Internationale Automobile, which is the governing body of motor-sport. Furthermore, at least 1000 of such touring cars must have been produced in twelve consecutive months. Thus there is no reason why a manufacturer should not use a Ford engine and a B.M.C. gear-box.

The maximum engine cylinder capacity is 1,100 c.c. and, in accordance with the F.I.A. ruling, the cylinder block and the cylinder head must be those of the engine belonging to a car classed by the F.I.A. in the Touring category.

The gear-box also must be that of an F.I.A. recognised touring car, while the braking system and principle, drum or disc, and the system and principle of feeding, by carburetter or injection, must remain the same as on the car from which the engine is taken. Cylinder capacities may be achieved by modifying the original bore, but no modification of the stroke is permitted.

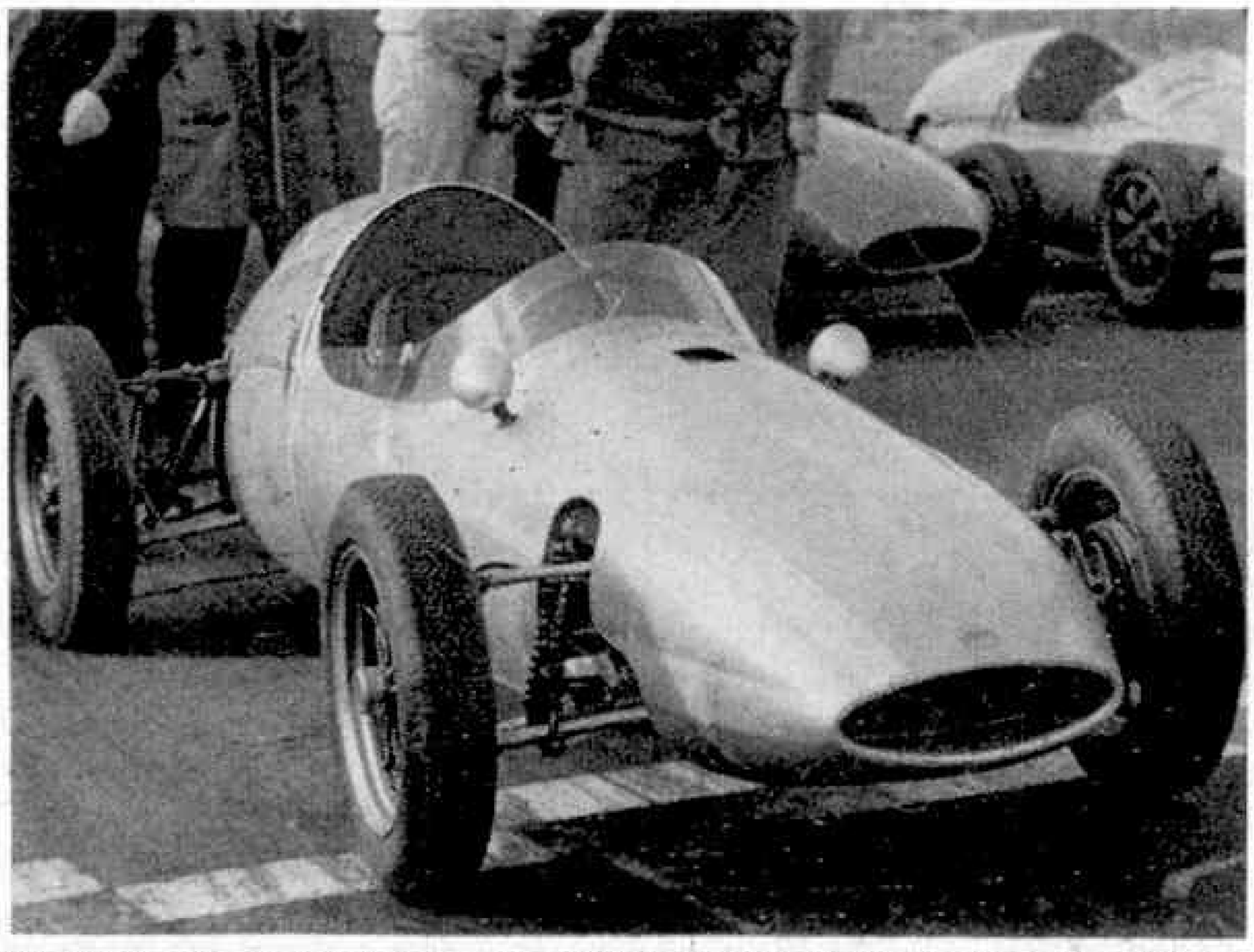
One other very interesting point concerns the minimum weight limit of 400 Kgs. This limit can be reduced to 360 Kgs. for cars with a cylinder capacity of 1,000 c.c. or less, which means that the British contenders can race a lighter car than the Italians with their 1,100 c.c. power units.

John Cooper, the man behind the great Cooper victories of 1959.

Here is the line-up of British manufacturers for the fray. Coopers are using a modified version of the B.M.C. Series A (Morris Minor engine), which has a capacity of 994 c.c. and gives some 70 b.h.p. at 6,500 r.p.m. The engine is mounted at the rear of a body that resembles a scaled-down version of the F.2 Cooper-Climax.

Eric Broadley, the designer/driver who achieved such remarkable success with his Climax-powered Lola's in 1959, has chosen a modified version of the Ford 105 E engine, as used in the new Anglia. This has 997 c.c. and gives 78 b.h.p. at 7,400 r.p.m.

The Gemini-Austin Formula Junior car, designed and built by ex-jet pilot Graham Warner, uses a B.M.C. Series A engine and will sell for £985 in full racing trim. The Elva, designed and built by Frank Nichols at Hastings, is powered either by a German Auto-Union D.K.W. two-stroke engine or a B.M.C. Series A engine. Last, but no least, is Colin Chapman, whose prototype Formula Junior car will be powered by the Ford 105 E engine, the first venture by Lola's into the rear-engined field.



The Formula Junior Cooper, one of the contenders in what may well prove to be the most exciting class of racing in 1960.

Coopers of Surbiton

If ever there was a father-and-son partnership with motor-racing in the blood, it is at Surbiton in Surrey.

(*Continued on page 108*)

New Life for Eskimos

Story of a Canadian Experiment

By Francis Dickie

CANADA'S Department of Northern Affairs and National Resources has now invested half a million dollars to give its western Eskimo nomadic hunters more secure living standards by becoming reindeer herders and ranchers instead of depending on the risks of trapping.

In the year 1929, the Canadian Government's Department of Northern Affairs gave serious attention to the changing life of its Eskimo population, particularly in the Mackenzie River Territory. Here the use of the modern rifle by Eskimo had so greatly depleted the once enormous caribou herds that the Eskimos' food resources for the future were seriously threatened. The musk-ox had suffered to an even greater extent than the caribou.

Caribou, one of the main supports of the Eskimos of the Mackenzie River Territory of Arctic Canada, became so scarce that food supplies there were seriously threatened. To replace them about 3,000 reindeer were driven in from a range many miles away in Alaska, and this article tells how they are now thriving in their new home, a range 17,900 square miles in area. The picture above shows a herd of the reindeer corralled last summer.

The Government, encouraged by the great success of the three Lomen Brothers, in Alaska, who had built up a commercial herd of a quarter million reindeer, bought 3,000 head from them in 1929 at a price of 195,000 dollars.

To prepare the most suitable range for this experimental herd, a preliminary survey had been made, and 6,600 square miles of feeding ground laid out at Kittigazuit, east of the Mackenzie River Delta. This was done by two experienced biologists and botanists, the brothers A. E. and R. Y. Porsild. To find the best range they investigated 15,000 square miles.

Then came the drive of the 3,000 purchased reindeer, which began on 22nd December, 1929. It was in charge of Andy Bahr, a famous Lapland herder, who had ten Eskimos to assist him. This drive from Alaska to Canada, was the longest, largest, most difficult and heroic in the history of the modern world, carried out over roundabout newly-made trails across an unmapped Arctic wilderness. About 3,600 miles were covered, and the passage of the reindeer took five years and four months! Yet the number of animals that reached the chosen range was 2,370! That only 630 were lost on the way stamps this as an outstanding feat.

The Department's outlay on this scheme reached half a million dollars by 1958. The plan has been a far-seeing, long-range one, now bringing worth-while reward in

benefits to the formerly nomadic Eskimo who previously had often been faced with starvation when game failed, and with poverty when trapping was poor and market prices fell.

The experiment has been surrounded by enormous difficulties, and its accomplishment was very gradual. This was directly due to the problem of changing a primitive race from its 1,000-year-old hunting way of life, nomadic and precarious, to that of the more secure, yet strange and different pastoral occupation of herding an unfamiliar animal. Actually, the most impelling motive in recent years in turning many Eskimos from their former risky hunting and trapping way of life has been the sharp lowering in the price of furs, particularly the white fox, which once was the Eskimo's chief source of good fortune.

Following the establishment of the original herd of 2,370 at Kittigazuit, Mackenzie Territory, on the Arctic western edge in 1935, the range by 1952 had been enlarged from 6,600 square miles to 17,900. This stretches from the Mackenzie Delta along the Arctic coast. There two herds range. One is under the supervision of a white superintendent and staff; the other is devoted to training young Eskimo in reindeer management. And today 100 experienced Eskimo are now launched in the new enterprise. Their training consisted of constant herding, checking, round-ups, the handling of meat and skins, and the control of wild animals preying on the reindeer and of insects.

To aid ambitious Eskimo, those passing the apprenticeship are given the personal care of small herds, 10 to 20. These the herder drives to new ranges. If successful he becomes the owner of his little herd, less the return of 10 per cent. of their number to the main herd.

At the start, the Canadian Eskimos had to change their mode of life abruptly when learning the complexities of herding. These are many and varied. Wolves constantly menace the animals, and an even greater terror to them is the warble fly. This lays eggs on the hairs of the animals, which quickly hatch. The resulting larvae eat through the hide, causing the reindeer to stampede with pain, and later they migrate to the back of the animal, cutting holes in the hide that greatly lessen its value.

A herd indeed has to be guarded night and day as, in addition to wolves and warbles, there are in most areas herds of wild caribou, an animal so similar that they may lure the reindeer to join them.

The most valuable aid to the Eskimo herdsman has now been supplied by the Department of the Interior. This was done by establishing in Saskatchewan a kennel to give special training to collie dogs. These are shipped to the herders. In addition to continual vigilant herding, the Eskimo must learn to find the best feeding ranges. This is of particular importance, because the moss, chief food of the animal, grows very slowly after it has first been cropped. That is why such an enormous territory as 17,900 square miles has been reserved. The herder must not return to any ground for at least a year after he has left it.

In autumn the herds are moved to winter range, 50 miles inland.

Sail-sled aided dogs used when laying out the vast range allotted to the Canadian reindeer.

Railway Notes

By R. A. H. Weight

Fine Steam and Diesel Runs on East Coast Route

Many of the ex-L.N.E.R. A3 Pacifics, built over 30 years ago, are still rendering excellent service and sharing in the most important duties, having been partially renewed and fitted with double chimneys and blast pipes. A few have small smoke deflectors close to the chimney.

Not long ago one of my illustrations depicted No. 60103 *Flying Scotsman* at the head of the down *Talisman*. At one time, when numbered 4472, this was an exhibition engine and kept in especially smart condition. I was pleased to find this old friend on the *Heart of Midlothian* last autumn looking in splendid trim. The performance was first-rate; with "11-on", including the usual heavy and comfortable coaches and restaurant cars forming this King's Cross–Edinburgh express, fully 400 tons behind the tender, a slightly late start was made. With good uphill work and expert handling by a King's Cross top link driver, though not exceeding 80–81 m.p.h., we stopped at Peterborough before time in 74 min. for the 76½ miles. The schedule then of 78 min. was regarded as a fairly tight one, but those E.R. 4–6–2s, whether old or newer, frequently have a good deal in hand! I alighted at Peterborough and watched the train depart for York, next stop, now headed by A2 No. 60500 *Edward Thompson*, which would work to Newcastle.

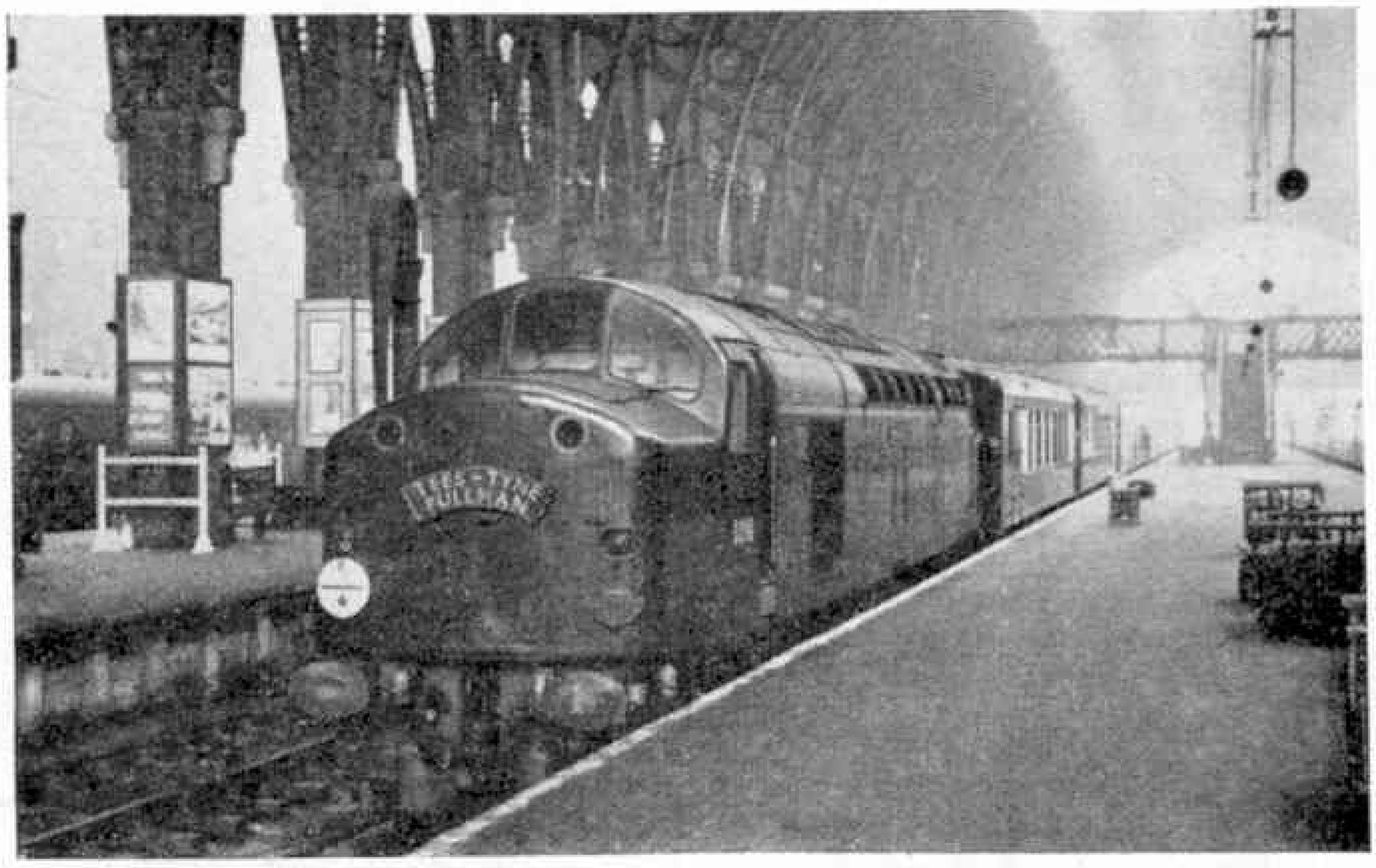
To a limited extent during the past 18 months or so, 2,000 h.p. type 4 1 Co:Co 1 English Electric diesel-electric locomotives have also been employed. They excel in acceleration from starts or slowings, and with moderate loads are able to coast on the level at high speeds, or to take the shorter uphill stretches in their stride on full power. They appear masters of all the present normal schedules when in good fettle, though not necessarily equal overall to the finest, and more flexible, steam Pacific performance.

My first experience of one was behind No D209 on that very fast 40 min. start-to-stop timing along the nearly level 44 miles Darlington–York given to the 5.0 p.m. Newcastle–King's Cross businessmen's express. Before the Bradford–Leeds portion is attached at Doncaster, we had only "7-on" but very full. Once out on to the main line after leaving Darlington platform, which is on a loop track, the diesel swept up the initial rise past the junction for Catterick and Richmond (Yorks.) at 70 m.p.h. or more, and within 10 miles was travelling at over 80.

Then came an easing for the track troughs, water being picked up, perhaps rather surprisingly, by these locomotives to fill the oil-fired train heating boiler carried. Through Northallerton, 14 miles in 13½ min., and Pilmoor, 28 miles in 23½ min., sustaining 83–88 m.p.h., and then an easing down led to a long severe slack where track relaying was in progress. Full power acceleration effected the attainment of 78 m.p.h. in the few miles of open country before reaching the busy approaches to York yards and junctions. After a careful run in to the south end of a long platform, we stopped only 1 min. late; the average of 64½ m.p.h. on this comparatively short run was remarkable in view of the severity of the delay.

On the heavier *Tees–Tyne Pullman*, 8 cars weighing about 330 tons, No. D208 with Driver Hoole, logged by Mr. Norman Harvey, was nearly as fast away from Darlington and ran similarly on the level south of Northallerton, passing York, unchecked in the fast time of 36 min. Notwithstanding two signal stops and at least 10 slowings for signals, maintenance or repair work of varying extent, the 60 m.p.h. Darlington–King's Cross allowance was improved upon and an arrival in London secured at 1.57 p.m., 6 min. before time! Maximum touched was 92 m.p.h. but south of Peterborough there was nothing higher than 82.

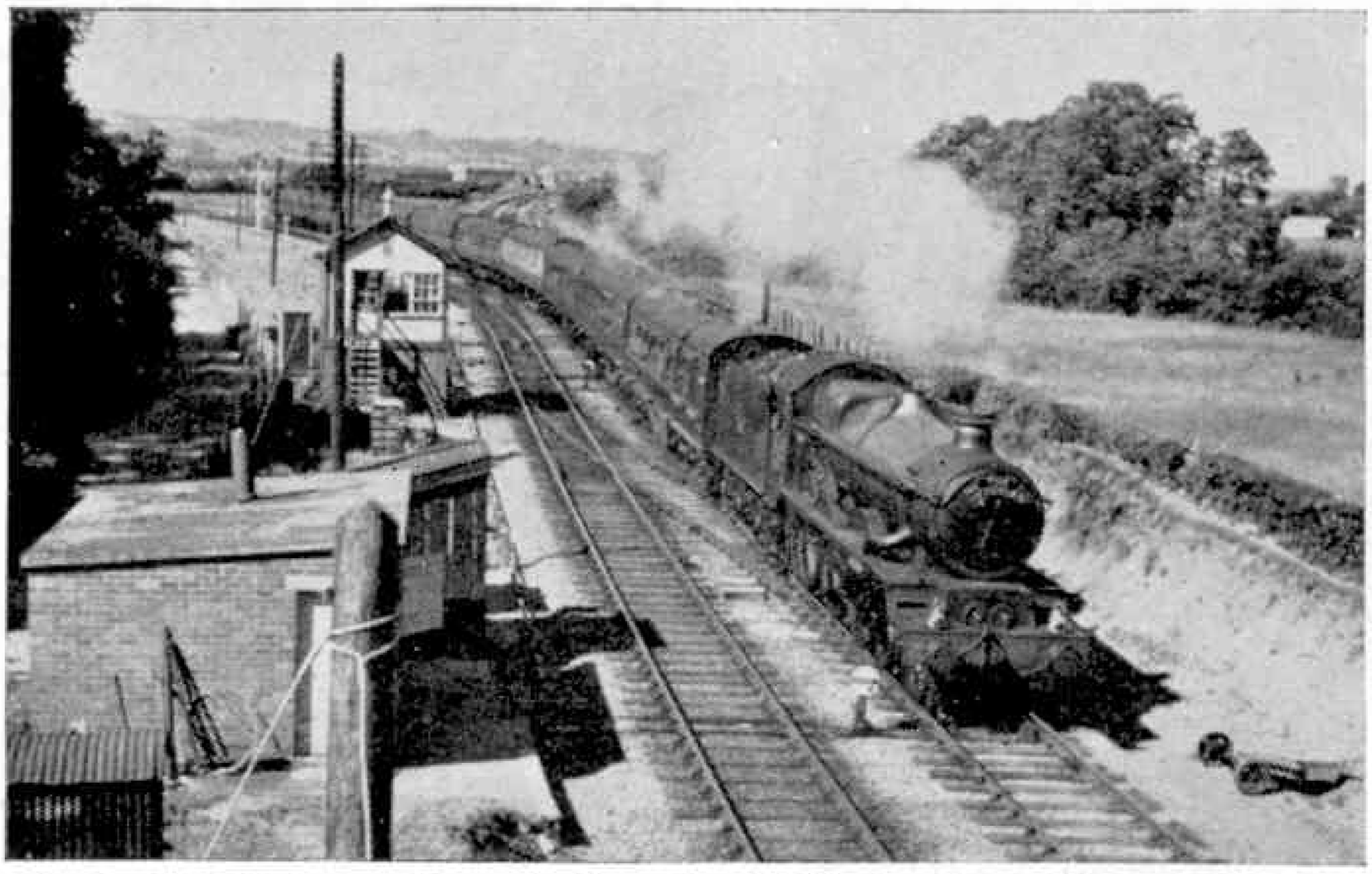
These units have hauled the *Master Cutler* Pullman expresses since their introduction in September 1958 as very fast Sheffield–King's Cross services. The 6-car set, in between those morning and evening journeys, which involve a call only at Retford, covers the same 161-mile course each way starting from King's Cross at 11.20 a.m., Sheffield at 3.20 p.m., stopping also at Peterborough and Grantham. Thus the round trip is covered twice in the one day. Quite exceptionally, these runs both ways include *two* start-to-stop schedules at well over the mile-a-minute average.



Diesel-electric locomotive No. D208 at rest at King's Cross after arrival with the "Tees-Tyne Pullman" on the journey described on this page. Photograph by R. F. Roberts.

Owing to traffic and engineering delays, the afternoon southbound Pullman, about 250 tons worked by No. D201 when I was aboard, left Grantham 12½ min. late, so there was plenty of scope for powerful enterprise that was certainly forthcoming! Up the 1 in 198 to Stoke summit, 5½ miles from the start, there was steady acceleration to 61½ m.p.h.; 3½ miles further on we were up to 90; and we averaged 88½ over 15 miles down the famous descent, with a minimum of 87 and maximum of 92 m.p.h., which brought us to rest in Peterborough station, 29 miles, in no more than 25¾ min.! Quickly away and with a timing now allowing more margin performance continued lively indeed; the 27 undulating miles from Huntingdon to Hitchin were covered at an average of 80, with maximum 90, for example.

Despite a check past Abbots Ripton station in course of demolition and a short signal stop near Welwyn Garden City, the diesel knocked 8½ min. off the 79 min. Peterborough–King's Cross booking and was in only



The Bradford-Paignton "Devonian" passing Uphill Junction, with No. 5053 "Earl Cairns" of the Castle class. Photograph by B. C. Bending.

2 min. late. The 105½ miles up from Grantham in 97½ min., two stops included, was certainly another new record of its kind for me!

Fresh Locomotive Naming

Additions recently announced or reported include the following: New Peak class main-line diesel-electric, built at Derby for L.M.R. service: Nos. D2–8, respectively named *Helvellyn, Skiddaw, Great Gable, Cross Fell, Whernside, Ingleborough* and *Penyghent*; and new W.R. diesel-hydraulic express No. D812 *Royal Naval Reserve*.

Hitherto the only unnamed rebuilt Patriot 4–6–0, No. 45528, is now *R.E.M.E.* Other additions include Britannia 4–6–2 No. 70046 *Anzac*, commemorating the Australian and New Zealand Army Corps of 1914–18 fame; both L.M.R. Standard class 5 4–6–0s in S.R. service, Nos. 73082-3 *Camelot* and *Pendragon*; 73085, *Melisande*; 73089, *Maid of Astolat*; and 73119, *Elaine*.

The King Arthur names previously carried by Nos. 30736–55 (withdrawn) are being transferred to Nos. 73080–9, 73110–19, though not apparently in the same order.

Co-Co electric, class EM2, in Manchester–Sheffield service, No. 27000, *Electra*, and No. 27001 *Ariadne*, and a few others, have also been observed.

Western Tidings and "Castle" Performance

Along the one-time Midland Bristol–Birmingham–Derby line traversed by the *Devonian* and other north-west expresses, a good deal of which is now in W.R. territory, I ascended the famous 1 in 37 2-mile Lickey Incline near Bromsgrove, Worcs. The train was a semi-fast one bound for Birmingham off the Worcester–Droitwich loop route, hauled by an L.M.S. type class 4 0–6–0 assisted in rear by W.R. pannier tank No. 8403. A modern 2–10–0 and two L.M. standard 0–6–0 shunting tanks were the other banking engines waiting for use together, or singly, according to weight of train.

Messrs. D. S. M. Barrie, M.B.E., and B. C. Bending recorded the runs about to be mentioned. The Paddington–Oxford–Worcester–Hereford service, including *The Cathedrals Express*, has been recast and improved, with departures every 2 hrs. from Paddington between 10.45 a.m. and 6.45 p.m., and from Worcester to London two-hourly from 8.55 to 6.55 *Carn Brea Castle* with a very full 10-coach south-bound evening train gained time between stops at Evesham, Moreton-in-Marsh, Kingham and Oxford over a fairly sharply graded route, speeds uphill and down ranging from 41 to 73 m.p.h. Practically on the level after Oxford, running was more even. There were two extra slowings, but with a maximum speed of 71½ almost the whole of a 10-min. late start from Evesham was recovered. *Powis Castle* whirled an 8-coach special from Paddington to Oxford, 63½ miles in exactly 1 hr., despite two severe slacks; 77 m.p.h. was averaged on the level, with a maximum of 84.

The *South Wales Pullman*, 8 cars, 335 tons gross, 8.50 a.m. from Paddington to Newport, Mon., headed by *Kilgerran Castle*, easily made the 133-mile non-stop run in less than the 2½ hrs. allowed. But for signal checks, the train could certainly have equalled the over 60 m.p.h. quickest schedule given to the lighter 10.55.

Two of the best Bristol expresses on summer Saturdays were hauled by another Castle 4–6–0, *Evesham Abbey*. Westbound the 1.15 from Paddington attained 88 and 80 m.p.h. down the two short descents near Dauntsey and Box, made up time lost by several slowings, and after a fast finish following the one stop at Bath, reached Temple Meads 2 min. early with "9-on". Having a coach less, but the quicker 2-hr. allowance in the opposite direction, starting at 11.45, there was fast running via Badminton to Reading, and then some signal delay due to heavy traffic. Even so the train was in Paddington at 1.46, which was good enough.

B.R. No. E3001, the first locomotive to be delivered for the Manchester-Crewe electrification from the builders, Associated Electrical Industries Ltd., by whose courtesy this illustration is reproduced.

In the underground headquarters of the North American Air Defense Command, at Colorado Springs, U.S.A.

The Red Telephone

By

John W. R. Taylor

ON a desk in an underground operations room at Omaha, Nebraska, stands a bright red telephone. It is probably the most important telephone in the world because, by dialling ten numbers on it, the commander of the U.S.A.F.'s Strategic Air Command could send into action his whole immense force of bombers and long-range rocket missiles.

The decision to do so would be taken only if it were certain, beyond any shadow of doubt, that the United States was about to be attacked. As a result, it will almost certainly never happen, because the leaders of the great nations know that there could be no winner in a war with H-bombs. This is what they mean when they talk about "deterrents", because the knowledge that any attack would be met by swift devastating counter-attack deters anyone from starting a full-scale war.

However, a deterrent is effective only if there is no way of preventing its being used. If an enemy could wipe out all Strategic Air Command's airfields and missile sites with one swift blow, there would be no fear of counter-attack. So America's air defences must be equally ready for action, 24 hours a day, every day, and this is ensured by the most complex and costly military organisation the world has ever seen.

Known as the North American Air Defense Command, or NORAD for short, it combines the anti-aircraft defences of the United States and Canada, which operate as a single force. Its headquarters are at Colorado Springs, only 500 miles from Strategic Air Command HQ, but the units it controls reach out for thousands of miles in every direction, over the Atlantic and Pacific Oceans and up into the white wastes of the Arctic. Its eyes and ears are radar, its weapons supersonic fighters and guided missiles, its brain an incredible electronic computing system known as SAGE (Semi-Automatic Ground Environment).

SAGE can send a fighter 'plane into action and enable its pilot to shoot down an enemy bomber which he never sees except as a spot of light on his radar screen. It does so by a nation-wide network of computers which decide automatically whether an aircraft detected by radar is hostile and if it would best be intercepted by piloted fighters or missiles. To do this it has to take into account immense "stores" of information on such things as known flights of friendly aircraft, locations and strengths of fighter bases, fuel consumption rates of various types of interceptor, and current and forecast weather, at the same time ensuring that no target is overlooked and no interception duplicated.

Radar is, therefore, the first link in the chain of defence, upon which everything else depends. So NORAD's first task was to complete a radar "fence" ten to twelve miles high around 15,000 miles of North America's frontiers, through which no aircraft could fly without being detected.

To achieve this, three vast lines of radar "listening" posts now extend from coast-to-coast across the continent. The first is the Pinetree System, running roughly along the U.S./Canadian border and linking the

U.S.A.F. and R.C.A.F. fighter squadrons into a single defensive force. North of the populated areas of Canada, along the 55th parallel, runs the Mid-Canada Line. Farther north still is the DEW-line (standing for Distant Early Warning), a chain of manned and automatic radar stations stretching across the Arctic Circle from Alaska to Baffin Island and representing one of the greatest military engineering feats of recent years.

Nor is this all, for at an average distance of 125 miles off the east coast are Texas Towers—radar stations standing high above the waves on stalky legs sunk into the sea-bed. These are important, for radar waves travel normally in straight lines and do not bounce back from the Heaviside layer of the upper atmosphere as do radio waves. As a result, they cannot see "over the horizon" and one way of extending their range is to move the radar aerials out as far as possible from the coastline they are protecting.

The Texas Towers are supplemented by radar picket ships of the U.S. Navy, cruising off both the east and west coasts, and by radar-crammed Warning Star (Super Constellation) aircraft and Goodyear airships of the U.S.A.F. and Navy. By flying high, these can see much farther than the surface radar, just as you can see farther out to sea from the top of a cliff than from the beach.

The Warning Stars carry crews of up to 31 men, including relief aircrew and radar operators and mechanics, and can stay on patrol for up to 24 hours; the airships sometimes remain on station for several days at a stretch.

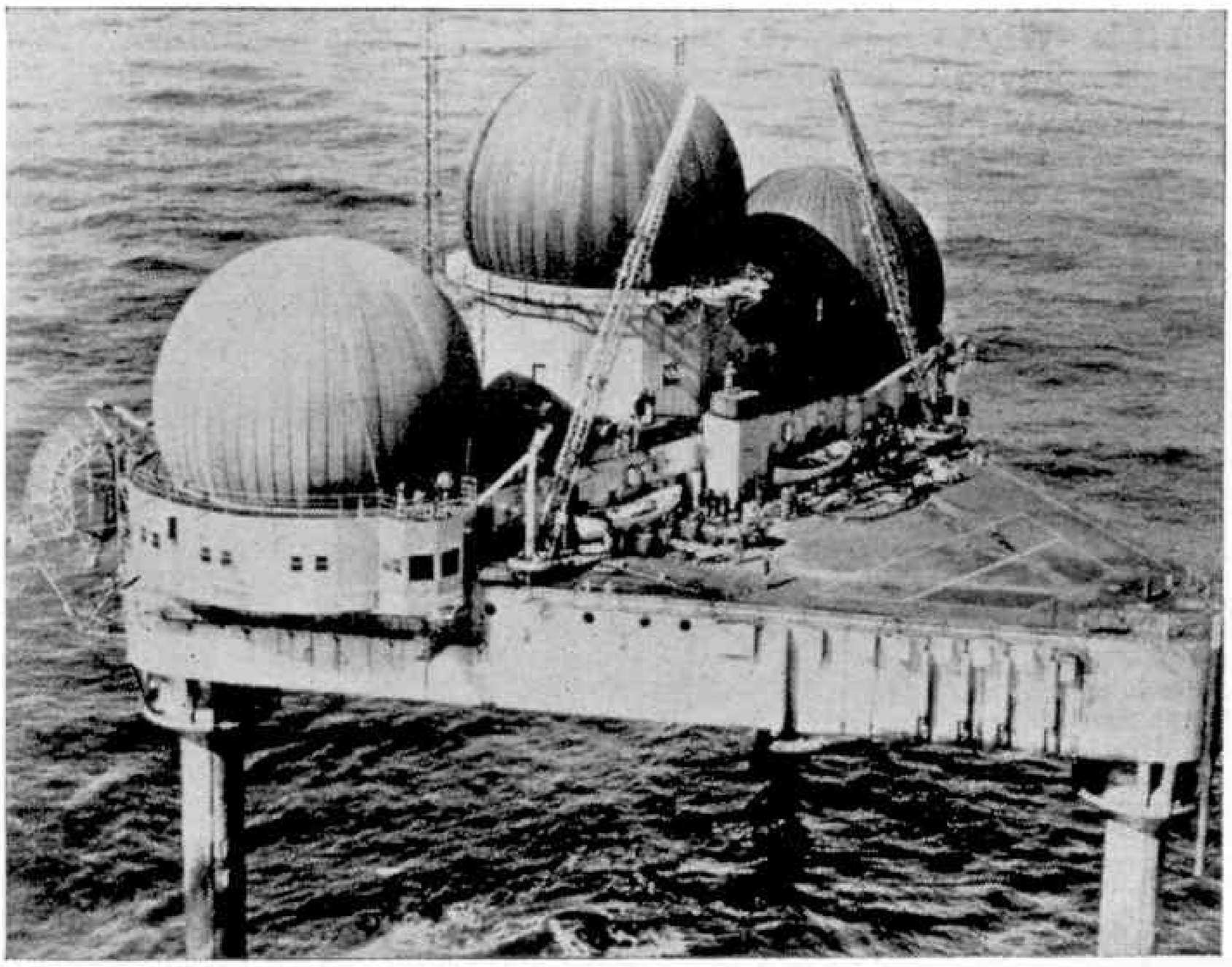
Let us imagine now that we are in an enemy bomber heading for New York over the North Pole. To escape detection for as long as possible, we fly low "under the radar" and use electronic countermeasures devices to confuse and jam the invisible eyes that we know are searching for us.

However hard we try, we cannot elude the defences for long, and eventually a radar station, or perhaps a circling Warning Star, flashes a message to one of the SAGE computers that it has picked up an unidentified aircraft. In a matter of seconds—and seconds are important when dealing with a bomber that can travel 20 miles in a minute—the computer works out that we do not appear to be friendly, and the fighter control officer sends an intercept message to the airfield best sited to deal with us.

The result is no Battle of Britain type "scramble", with pilots dashing from a hut to their fighters parked around the airfield. Squadrons of the U.S.A.F. and R.C.A.F. are at permanent round-the-clock readiness, and the pilot of the Convair F-102A Delta Dagger chosen to intercept us is already in his cockpit, inside a small open-ended hangar. Within seconds of receiving the signal to go, he has pushed the starter button of his powerful turbojet engine and is roaring straight out of the hangar and up into a steep climb.

Meanwhile our course is being tracked accurately by the SAGE computer, which puts a picture on the fighter pilot's radar scope that he would not normally get until he was much closer to us.

Watching only his instruments, with his head down and eyes fixed alternately on



One of the triangular-shaped "Texas Tower" radar stations erected at an average distance of 125 miles off the east coast of the United States.

A Convair F-102 Delta Dagger of the U.S. 317th Fighter-Interceptor Squadron sweeps across the Alaskan sky. Official U.S. Air Force photograph.

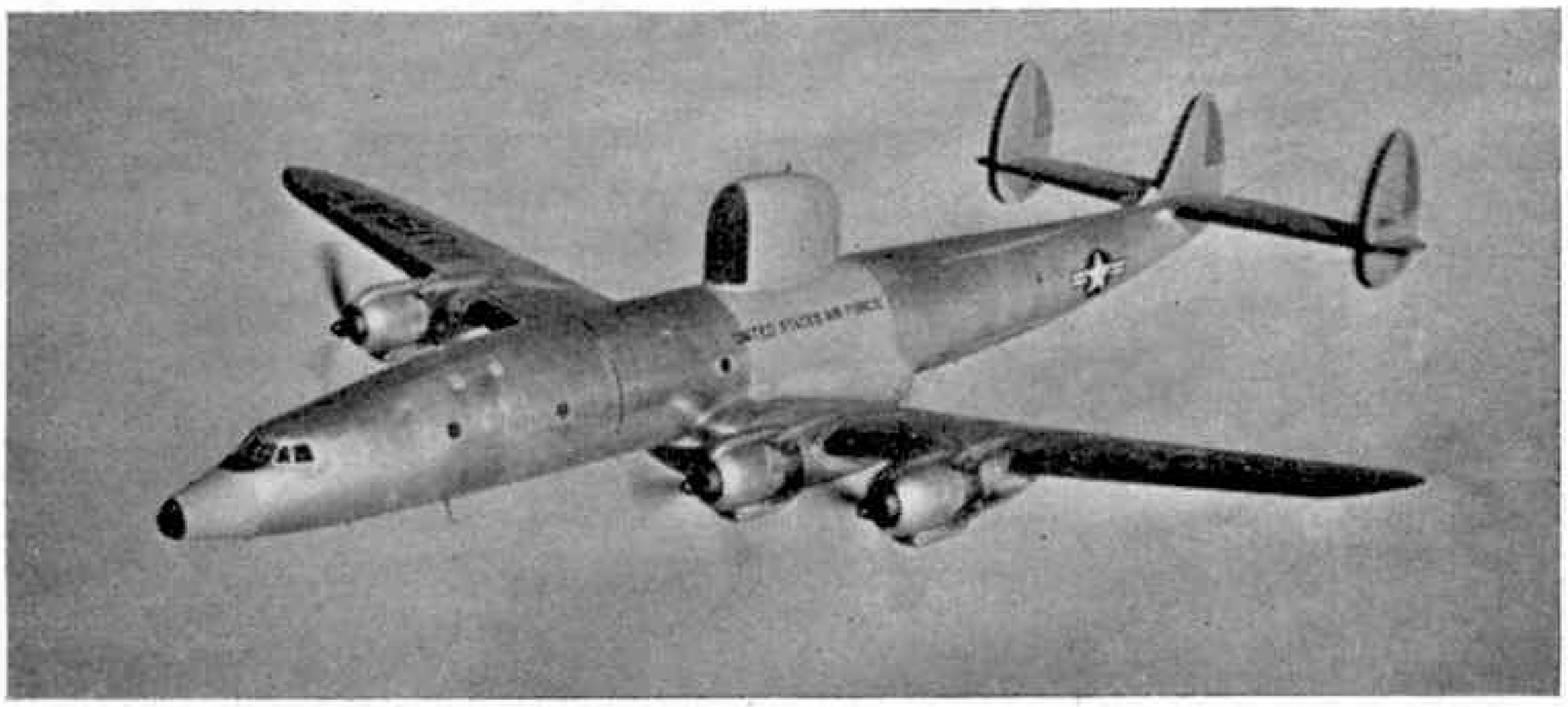
the viewing scope and blind flying panel, he receives seven vital pieces of information from the computer; the command heading (direction to fly), how long to fly on the command heading, the speed to fly, the altitude to fly, the bearing on which the target will appear on his scope when it is near enough to be picked up by his own radar, the range of the target, and the attack heading.

No matter how often we change course, we cannot dodge him, for when he is near enough for the radar fire control system in the Delta Dagger's nose to take over from SAGE the pilot has nothing else to do. From that moment, the radar flies the aircraft automatically through the auto-pilot, and fires its armament of Falcon homing missiles at just the right range.

All of this sounds frighteningly efficient, and it is. What is more, the techniques are being improved daily. Later aircraft, like the 1,500 m.p.h. F-106 Delta Dart, are entering service in growing numbers, carrying powerful new weapons like the nuclear-warhead Genie air-to-air rocket. Already they are supplemented by rings of Nike anti-aircraft guided missiles, and the first Bomarc pilotless interceptors are on the ramp ready to hunt down and destroy enemy raiders under complete SAGE guidance, at speeds up to 2,500 m.p.h. And to get the fighters into the air even more quickly, they too can, in some cases, be fired from a ramp like a missile.

The possibility of a bomber slipping past such a defence system is remote; but what happens if the attack is made by long-range rockets? The answer is that no country at present has any defence against such missiles. This state of affairs will not last, for America is building huge radar sites in the Arctic which could detect the launching of a long-range rocket, giving the defences at least 15 minutes in which to work out where it would re-enter the atmosphere and to arrange a reception committee of anti-missile missiles.

It is unlikely that such a system of defence will ever be 100 per cent. successful; but this is not serious. The best defence of all is the knowledge that, at the first hint of any threat, the commander-in-chief of Strategic Air Command could pick up that red telephone and launch the most devastating counter-attack in history.



One of the radar-crammed Warning Star (Super Constellation) aircraft used by NORAD. The height-finding radar is on top of the fuselage and the distance-measuring and bearing radar beneath.

To Work by Bike and Boat!

Passenger Ferry Service Across the Avon

By Alan P. Reice

IN this age of progress, passenger-carrying ferry boats on short inland waterway routes are relatively "rare birds". The mile or two saved by crossing a river, canal or harbour no longer has any real significance now that we have private cars and motor cycles in ever increasing numbers, and so many of the old small ferry services have become redundant for the want of fare-paying passengers. But there is one such service that is still very much alive. It is the one across the River Avon that connects the village of Pill, on the Somerset side, and Shirehampton, within the Bristol boundary, on the other.

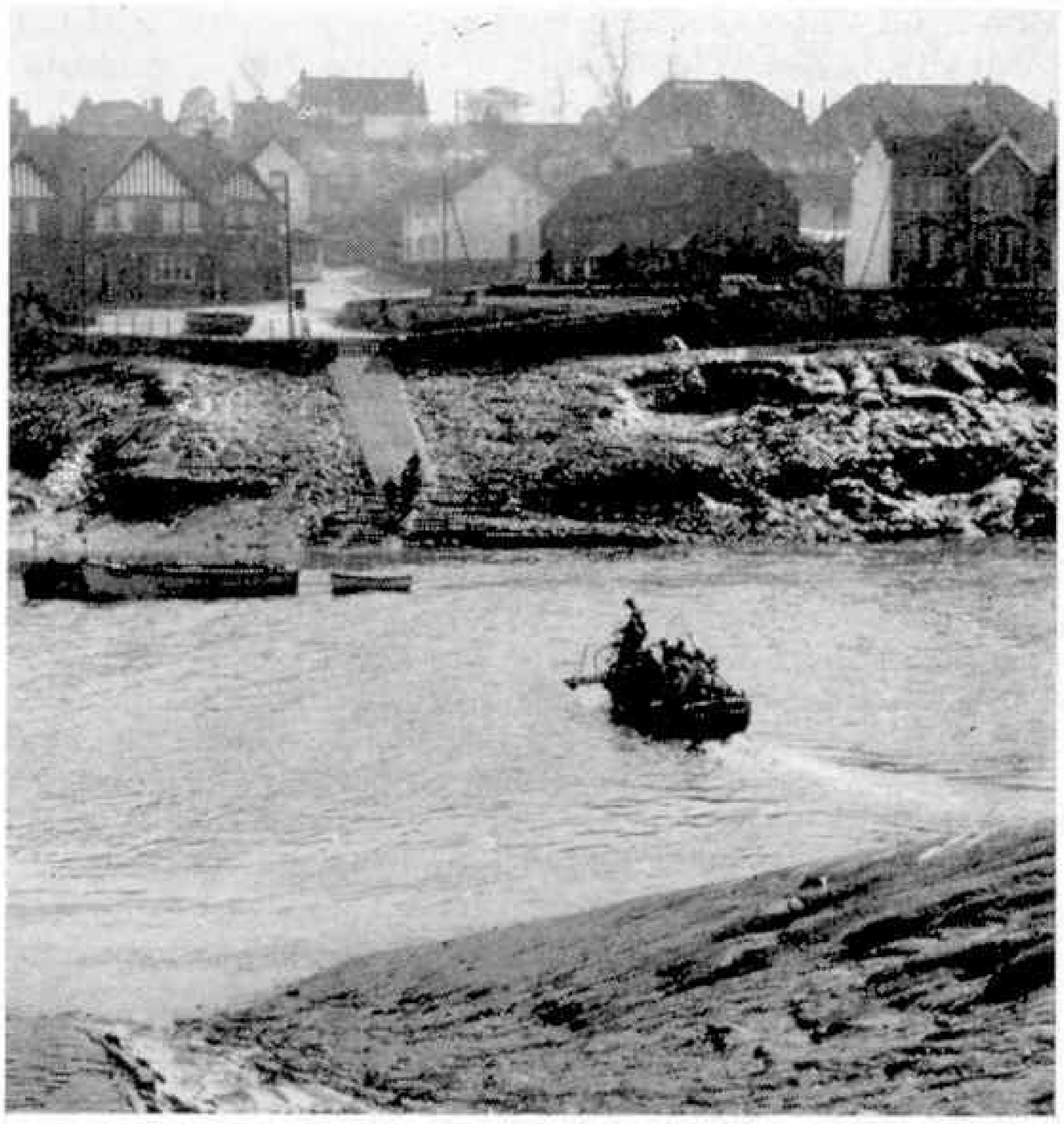
The Avon, whose main claim to fame is that there is only one other river in the world that has a more impressive tidal rise and fall, flows into the River Severn and Bristol Channel at Avonmouth, barely a mile below Pill. The river carries its constant flow of traffic round the Horseshoe Bend, under Brunel's famous, and much photographed, Clifton Suspension Bridge, between Avonmouth and the historic Docks in the centre of the City of Bristol. The Suspension Bridge is important, for it provides the road over the muddy waters of the Avon between the Somerset countryside and Bristol. It is the route taken by those who prefer to use their own transport rather than cross the river by ferry as a pedestrian.

It is appropriate that the ferry service should have its roots in Pill, for throughout the years, this small, low lying and often flooded village has been home for many of the channel and river pilots who safely conduct vessels of all sizes to and from their berths at either Avonmouth or Bristol. Traditionally too Pill has supplied the Docks with "Hobblers", the men whose task it is to attend the ships and carry the hawsers and ropes during tying-up or untying operations.

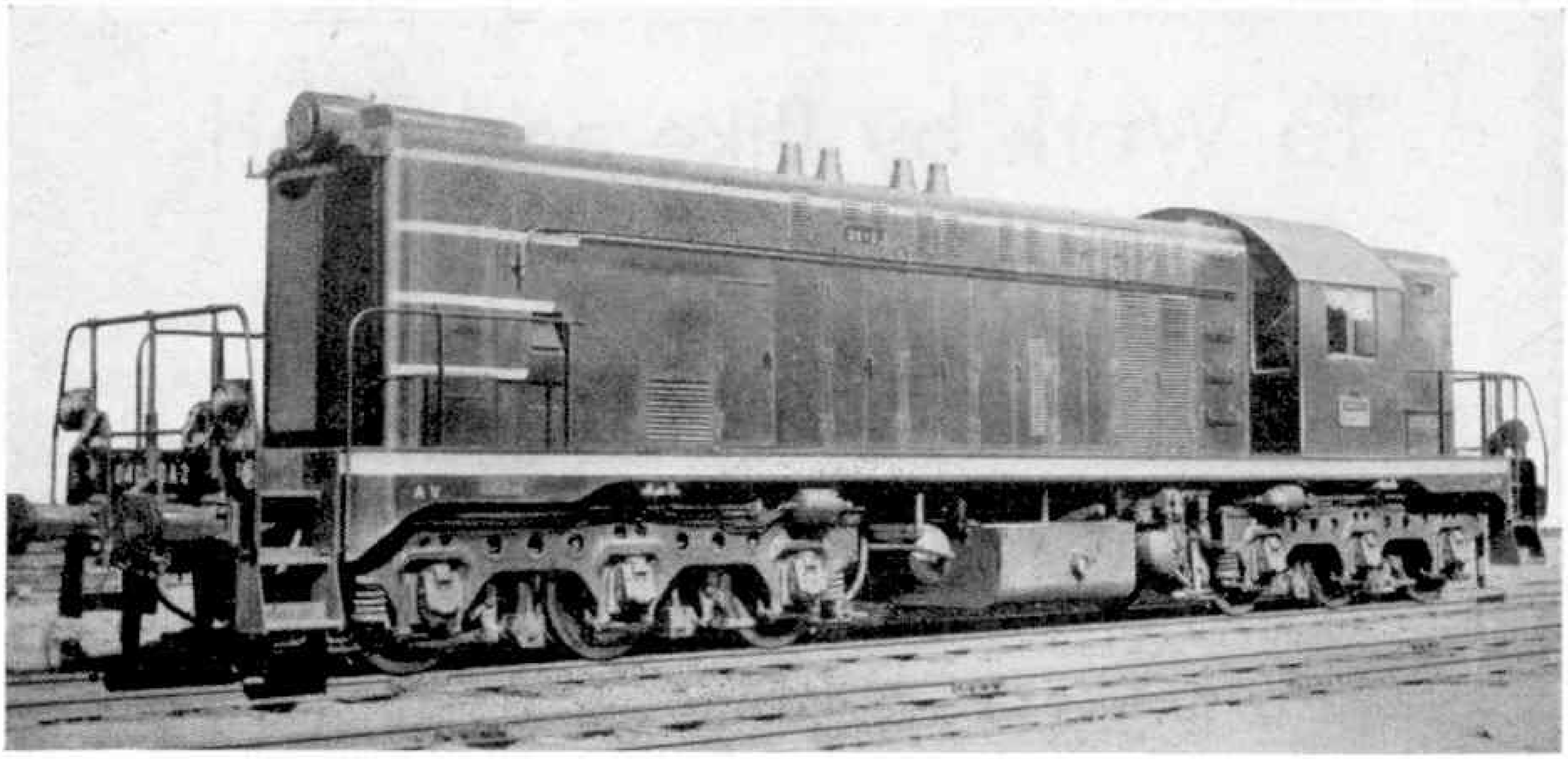
With the steady expansion of outlying districts, especially in the Portishead area, the importance and value of the ferry is increasing rather than decreasing. Crossing the river, between Shirehampton and Pill, takes only a few minutes, while the alternative routes can add something in the region of ten miles to a single journey.

The Pill–Shirehampton Ferry Service is privately owned and employs three boatmen, who work in shifts. Three boats are generally available, though only one is operational at a time. The first trip of the day is at 5 a.m. and from then on a diesel boat goes to and fro until 10.30 p.m.

From a mere glance, there appears to be little in the service that would interest a photographer, but after a while the whole muddy business grows on one. After all, it is not everybody who can say that their means of transport to and from work consists of a bike and a boat of the size seen in the picture on this page.



Back to Somerset by ferry. The charge, 1d. in 1939, is now 6d. The author's bicycle is prominent in the picture.



Locomotive That Needs No Driver

Shunting Movements Controlled by Radio

REMOTE control of engine movements has been brought to a high pitch of perfection in the Hornby-Dublo system, as readers of the *M.M.* already know. The starting, stopping, coupling and uncoupling of locomotives and rolling stock can be carried out from a control centre, and there is no need to touch them by hand.

All this is done electrically of course, but radio control of model trains too has been accomplished. As long ago as the year 1931 a radio controlled model locomotive was demonstrated in the United States and was illustrated in the *M.M.* during that year. This model went forward, reversed or stopped by voice impulses via a selector which determined the polarity of the track. Three syllables sent the engine forward and two syllables sent it backward but a single syllable order caused it to stop.

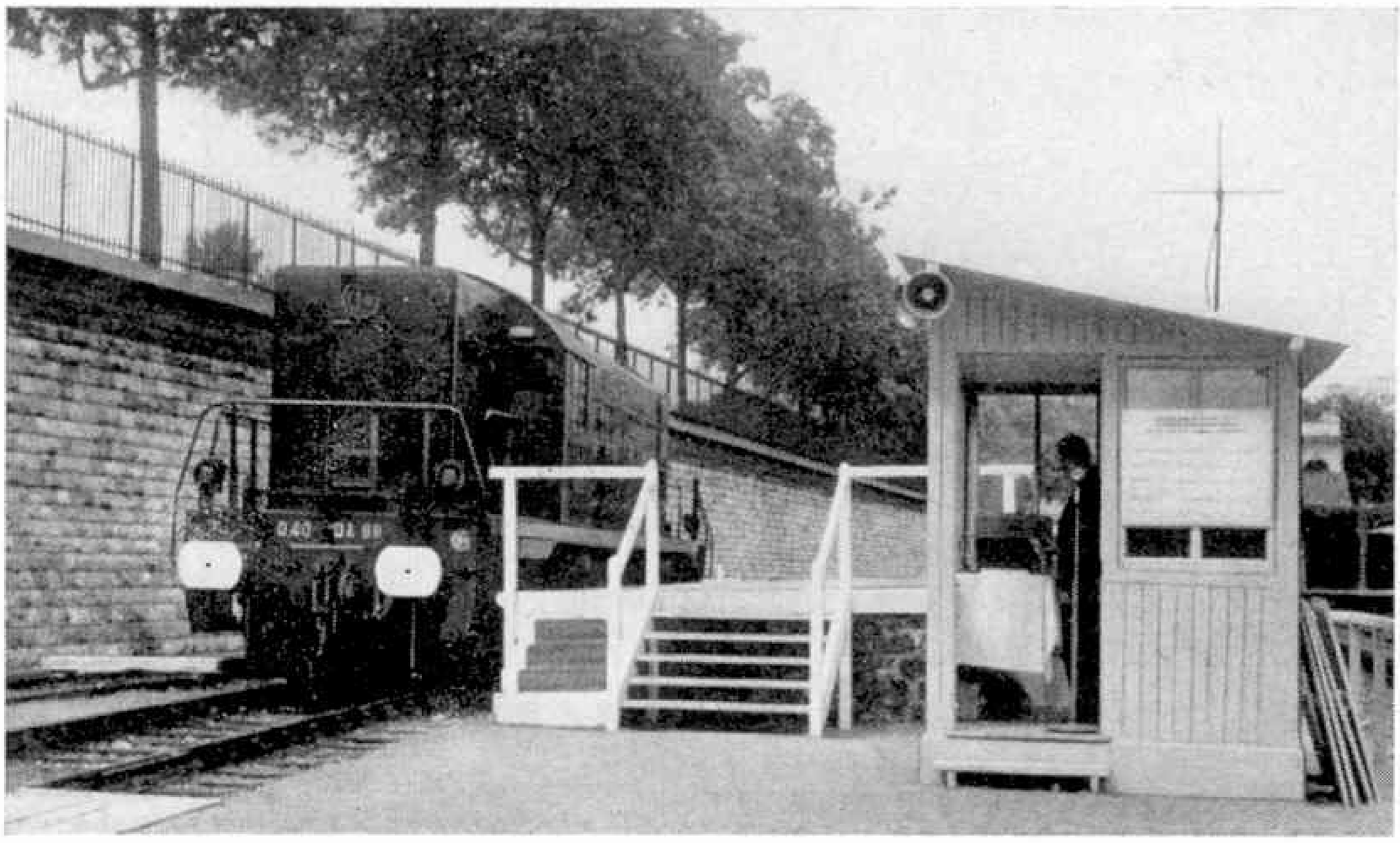
On full size railways, remote control has been tried experimentally and there is even talk in America of the possibility of driverless subway trains. One railway system, the French National Railways, better known as the S.N.C.F., even has a radio-controlled shunting engine already at work in the Marshalling Yard at Achères. This is a diesel-electric machine of A1A-A1A wheel arrangement, classed by the S.N.C.F. 040 DA, and is of 650 h.p.

The automation of marshalling yards naturally led to thoughts of its extension to the locomotives, which are continuously at work, and the problem was solved by means of apparatus devised and designed by the "Division des Essais de Matériel" of the S.N.C.F. The apparatus enables the remote-control of speed and reversing to be achieved. The speeds involved are low, as the locomotive has only to push wagons over the hump and along the yard tracks.

The diesel electric locomotive seen in the picture at the head of the page is remotely controlled and needs no driver on its footplate. It is used for shunting purposes in a railway marshalling yard in France, and its control is described in this article. For the details and photographs we are indebted to French Railways Ltd.

The problem of the remote-control of the speed of the locomotive has been broken down into two distinct parts. First, it was desired to control speed through electrical variance, a difference of potential in this instance, on the locomotive itself. It then remained to solve the problem of radio transmission of the difference of potential serving to determine the speed, and this too has been done.

The control apparatus includes both electrical and pneumatic gear. The essential component of regulation is a double stage magnetic amplifier. The input circuit carries the reference voltage, which determines the speed, and the voltage produced by a dynamo coupled to the wheels, which are in opposition to each



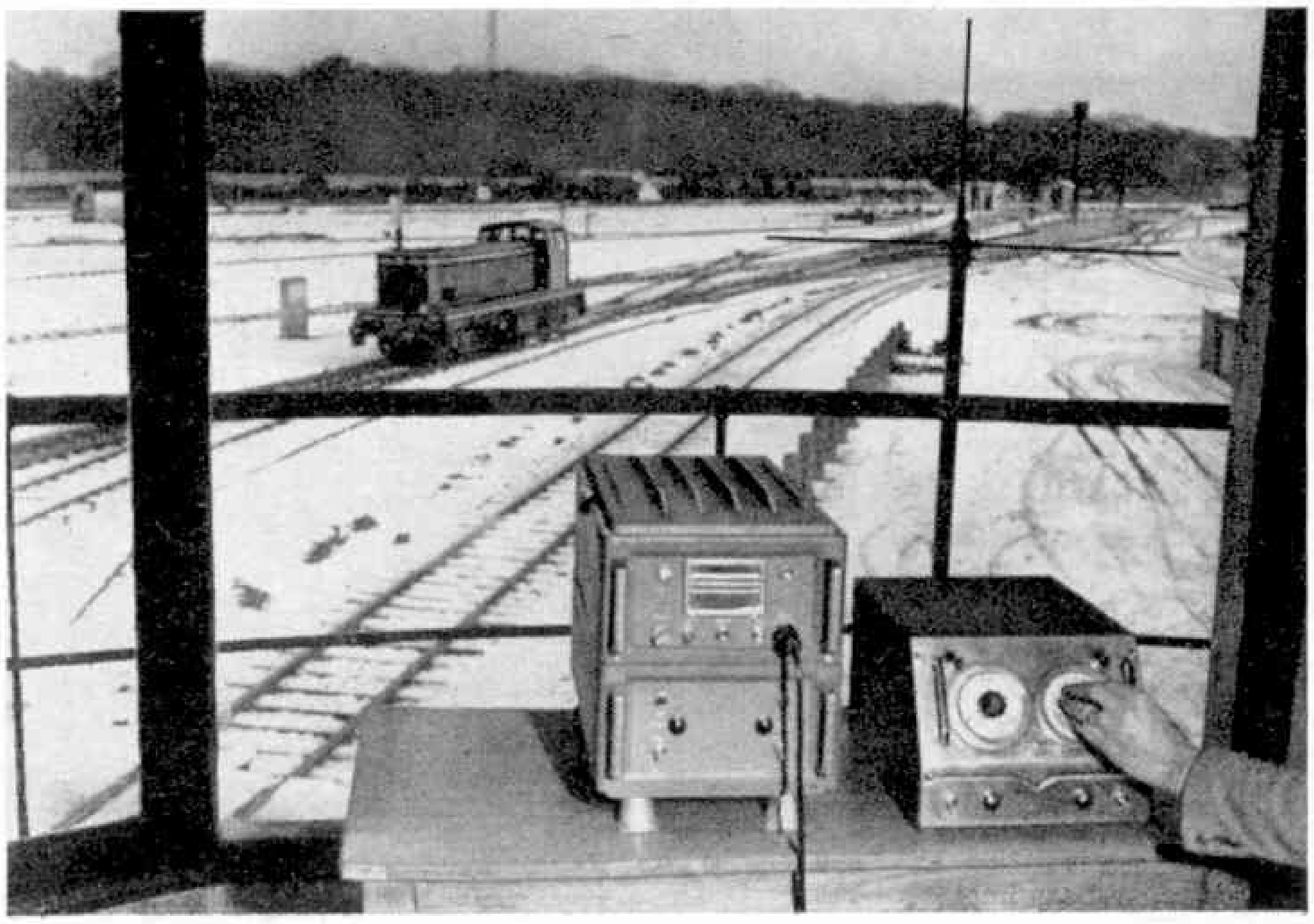
A remote control point from which the operator can govern the movements of the diesel electric locomotive, which is also seen in the picture.

other. The final output current from this amplifier acts on either the direct brake control or the diesel motor regulator control, according to whether slowing down or speeding up is required, and it does this through the intermediary of a pneumatic servo-control. Appropriate "counter-reaction" apparatus has been provided for both the electrical gear and the pneumatic gear so as to prevent violent changes and give smooth operation.

A remarkable feature of this apparatus is that reversing can be ordered while the locomotive is in motion without taking special precautions. "Memory relays" coupled with appropriate safety devices enable the operations, which a driver would carry out when told to reverse in these circumstances, to be performed automatically.

The remote control of speed, as that of reversing, has been designed to take the place of the actions of a driver without making any modifications to the control and regulator devices on the locomotive. If automatic control is to be changed over to control by hand, this can be done practically instantaneously.

Remote control will soon be used to set automatically the right shunting speed.



The operator's view from the control tower in the French Railways marshalling yard where the remarkable shunting locomotive described on these pages is in use.

The third production Vickers Vanguard. It is the second of twenty ordered by British European Airways.

Air News

By John W. R. Taylor

Another Record for Max Conrad

Following his wonderful 7,668-mile non-stop flight from Casablanca to Los Angeles last June, described in the October 1959 *M.M.*, Max Conrad has now set up a second international long-distance record in the same Piper Comanche lightplane.

His original record was for aircraft in Category C–1–d, with a loaded weight between 1,750 and 3,000 kg. (3,858–6,614 lb.). By exchanging the Comanche's 250 h.p. engine for a 180 h.p. Lycoming 0–360, and removing a 92-gal. fuel tank from the cabin, he was able to bring down the weight to 3,838 lb. This enabled him to attempt a distance record in Category C–1–c (2,205–3,858 lb.).

Once again he started from Casablanca and flew alone, across the Atlantic, for 56 hr. 26 min., before landing at El Paso, Texas. His official distance of 6,959 miles broke by just over 2,000 miles the previous record set up ten years ago by the late Bill Odom in a Beechcraft Bonanza.

400 Cheaper Fares

Good news for those of you who plan to fly abroad for your holidays this year is that fares will be even cheaper on many routes. B.E.A., for example, are offering reductions of up to 40 per cent. on 400 of their services from 1st April and it will be possible to fly from London to Paris and back at night for less than £10.

The new fares will coincide with the introduction of the Comet 4B into B.E.A. service, and it will be used initially on routes to Athens and the eastern Mediterranean as well as to Nice, Scandinavia, Switzerland and Germany. It will be followed in the summer by the new turbo-prop Vanguard, which is specially designed to make possible fast low-fare travel. Both types will wear the new B.E.A. insignia, with red wings, white cabin tops and black flash-lines, as shown on the Vanguard in the upper illustration on this page.

Sabre with Sidewinders

The lower illustration on this page shows the first Avon-Sabre fighter of the Royal Australian Air Force to be equipped with the deadly Sidewinder air-to-air guided missile, in flight over Melbourne. Two Sidewinders, on underwing racks, will supplement the aircraft's two standard 30 mm. cannon, increasing enormously its fighting capabilities.

Produced by the Philco and General Electric companies in America, the Sidewinder is a solid-propellent missile, nine feet in length and with a weight of 155 lb. It contains no more electronic components than the average home radio set, the key to its efficiency being an infra-red homing head which flies towards anything warm, such as the hot jet tailpipe of an enemy aircraft.

Practice Landings by TV

For many years now airlines and air forces have cut the cost of teaching pilots to fly large aircraft by carrying out a proportion of the flying training course in flight simulators. These are full-scale fully-equipped replicas of the flight decks of the aircraft they represent, and can reproduce the atmosphere of flying so realistically that the pilots can easily forget they are still on the ground. Their big advantage, apart from saving money, is that the instructor can introduce

The first Avon-Sabre fighter of the Royal Australian Air Force to be equipped with Sidewinder air-to-air guided missiles, one under each wing.

The record-breaking 31½-ton Russian Mil Mi-6 helicopter referred to on this page. Official Soviet photograph.

electronically incidents such as an engine cut at take-off or a strong headwind, to test the pilot's reactions, without any risk to the "aircraft" or the men on board it.

One of the best-known makers of flight simulators, Redifon Ltd. of Crawley, Sussex, have now introduced a new idea which will enable pilots to practice landings at airports they have never seen. It will utilise a closed-circuit colour television camera, which will "fly" over a detailed model of a particular international airport, so that the pilot will be able to look out of his windscreen and see it exactly as if he were approaching the real airfield. A single camera could be linked to several simulators at once and could be focused successively on any number of models of different airports, which could be fitted with lighting systems for practice night landings.

The Mighty Mil

Russia's Mil Mi-6, illustrated above, is now not only the largest helicopter in the world, but the fastest. Last November it flew around a 100-km. (62-mile) course at an average speed of 167·206 m.p.h., beating the previous record by more than 25 m.p.h. and exceeding by nearly 5 m.p.h. the fastest speed ever clocked officially by a helicopter (Britain's 191 m.p.h. Rotodyne is a convertiplane, not a helicopter).

In an interview in Moscow recently, its designer, Mikhail Mil, said that an aerodynamic "breakthrough" has made it possible to increase the speed of the Mi-6 to 217 m.p.h. One result of the breakthrough is, no doubt, the small wings which are now mounted above the main undercarriage legs to off-load the rotor in cruising flight He added that the Mi-6 should be ready for service during 1960 as an 80-passenger transport, and that its loaded weight is 71,000 lb. The two engines are 4,700 h.p. Soloviev TB-2BM shaft-turbines, mounted side-by-side above the front of the cabin.

Aloft in a Bensen Gyro-boat, towed by a fast motor-boat.

. . . Ad Astra

All Comet and Britannia aircraft belonging to R.A.F. Transport Command squadrons based at Lyneham, Wilts., are to be named after stars and constellations, the names being painted in black on each side of the aircrafts' nose.

The constellations from which Comets of No. 216 Squadron will take their names are Aquila, Cepheus, Columba, Corvus, Cygnus, Orion, Pegasus, Perseus, Sagittarius and Taurus. The "star" names of the Britannias of Nos. 99 and 511 Squadrons will be Acrux, Adhara, Aldebaran, Alphard, Altair, Antares, Atria, Arcturus, Argus, Avior, Bellatrix, Canopus, Capella, Denebola, Hadar, Polaris, Procyon, Regulus, Rigel, Schedar, Sirius, Spica and Vega.

Keen spotters will need no reminding that some of these names, such as Antares and Canopus, have been carried in recent years by B.O.A.C. airliners. But this is not the first time that R.A.F. transports have been named; in fact they got in first, because the four-engined Handley Page V/1500 which made the first flight to India between December 1918 and January 1919, carried the name of H.M.A. *Carthusian*, the prefix standing for His Majesty's Airliner.

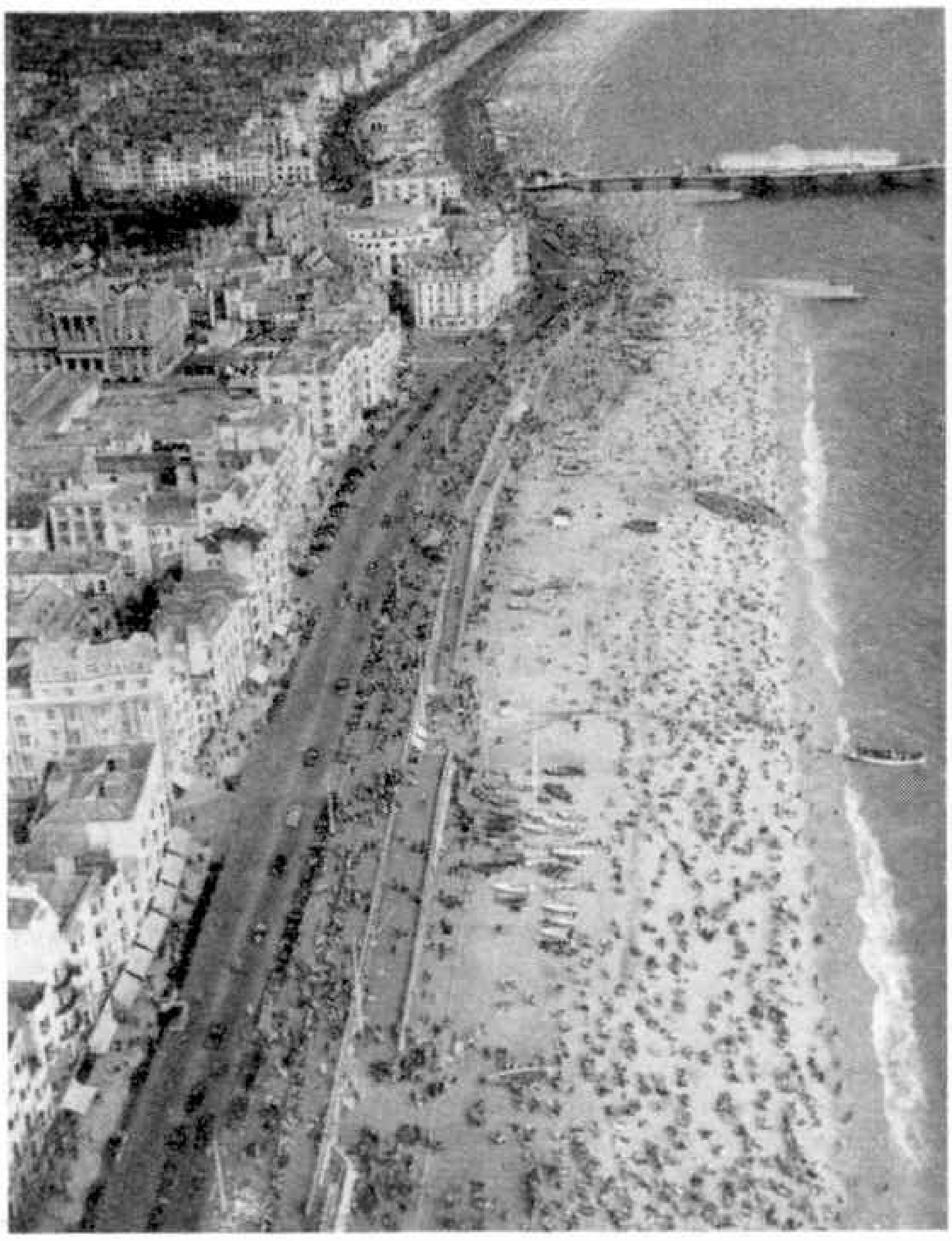
A Real Flying Boat

You could be excused for rubbing your eyes if you saw the aircraft shown in the lower illustration on this page during your next visit to the seaside. Despite its boat hull it *is* an aircraft, and many are already flying in the United States.

The idea was born when people who had built Bensen unpowered rotor-kites found that they were not popular at some airfields. These little kites, known as Gyro-Gliders, consist of a simple framework carrying a seat for the pilot, elementary controls and a free-turning rotor, and are kept in the air by being towed behind a motor car at about 30 m.p.h. Somebody suggested that there might be fewer complaints if the flights were made over water, where the rotor-kites would not get in the way of other aircraft. So Igor Bensen fitted the basic rotor-kite to a standard aluminium dinghy and the result was the Gyro-Boat, which flies beautifully when towed by a fast motor-boat.

* * * *

Japan has followed the lead of Germany and Canada in choosing the Lockheed F-104 Starfighter as its main fighter aircraft for the early 'sixties. This reverses an earlier decision in favour of the Grumman Super Tiger.



Weather and Industry

How Heat Waves and Frost affect Business

By

David Bowen, F.R.Met.S.

Above is Brighton, on a hot day. Commercially, this means an excellent beach trade, but shopkeepers may like to have a few showers as well to keep the people moving.

WHAT is the value of a weather forecast? To many of us it is merely a piece of interesting information, and perhaps of only little value in terms of pounds, shillings and pence. But this is not so to the industrialist who has weather problems on his mind.

Take, for example, the manufacturer of refrigerators. His sales are very greatly affected by weather—by *hot* weather. It is very simple, really. The more days there are in the year with temperatures above 70 deg. F. in Great Britain, the greater the number of household refrigerators sold to the public. Once the temperature exceeds 75 deg., the sales graphs for refrigerators rise very steeply, and over 80 deg. they literally "soar".

This may sound strange. One might think, at first, that people who wish to possess a refrigerator will purchase one, either when they want it or when they can afford it. In practice, however, there are a large number of people who resist purchase until the last moment, and a heat-wave such as we experienced last year—or even a shorter heat-wave—can often be the deciding factor.

Needless to say, ice-cream sales are very greatly affected by weather conditions. Once again, when the temperature rises to above 70 deg. F., and particularly if it rises to above 75 deg., the amount of ice-cream consumed in this country may be trebled or even quadrupled in a matter of a day or two.

If the heat-wave remains, then ice-cream manufacturers have a big distribution problem on their hands; also a manufacturing problem. Should they continue to manufacture ice-cream at the increased rate in anticipation of further hot weather? Or should they assume that the heat-wave will only last a short time and allow the reserve supplies in cold store to cope with the situation? Either way, there are considerable dangers. Over-production is wasteful and puts strain on any organisation if there is a lack of cold store facilities; under-production may mean that the demand for the product will exceed the supply.

In the spring, sunshine too will affect ice-cream sales, but once the season gets under way, a hot day, sunny or not, will make the public ice-cream minded.

Now take the case of paraffin and electric heaters. You will see these, beautifully displayed in ironmongers and electrical

The needs of the fruit growers are well known to the commercial meteorologist. Advance forecasts of serious night frost may lead to scenes like this. The braziers serve to keep air temperatures above the freezing point.

shops every autumn. A few may be purchased for Christmas presents, but the public, as a whole, does not buy these heaters in readiness for a cold spell. It waits for the cold spell to arise!

Manufacturers, therefore, wish to know how to gauge their production programmes, and the retailers too are interested. If the autumn is likely to be cold, then it is as well to have production and distribution well advanced. If no cold weather is likely until after Christmas, it is unwise to overstock. If, on the other hand, the whole of the winter will be mild, then there is clearly a case for not producing too many heaters of any one model, for designs change each year, and it would be fatal to be selling old stock for too long in this competitive age, when new designs are coming out all the time.

In fact, the more one goes into problems like this, the more it is obvious that weather information is needed by commerce and industry in hundreds of different ways. Hot summers mean a heavy demand for cotton goods, increased sales of beer, and a slump in the mackintosh trade. Cool, wet summers mean the reverse. Manufacturers of fertilisers and insecticides are also greatly affected by weather, principally in spring and summer. If the spring is very dry there is little chance of the fertilisers being washed down into the soil, and sales of these products will therefore slow down. Hot summers lead also to increasing insecticide sales, on the other hand. One has only to look at the summer of 1959, with its attendant fly plagues, to see the reason for this.

Mention should also be made of the large number of weather forecasts used by the civil engineering industry. A number of contractors have frequently been known to make unexpected use of heavy plant on normally waterlogged sites, due to long-term forecasts of either prolonged dry weather or of hard frosts, which will keep the ground hard. Contractors will also use commercial weather forecasting as a safeguard for their operations—particularly for contracts involving marine and tidal operations, including the building of dams and river bridges.

Rainfall is generally the chief problem for the civil engineer. A fall of more than three inches in a single day has

An artist's impression of a wind generating station in the Orkneys. The siting of these stations is in part based on statistics supplied by commercial weather consultants.

been recorded in every county of Great Britain, except Clackmannan and Kinross; yet such a fall is capable of great mischief. A site can be workable one moment and become a morass within a few hours, and this may retard a completion date by many weeks.

From this short survey of weather forecast requirements in the industrial and commercial fields, it will be seen that most of the forecasts needed will have to take into account a long-term trend of perhaps a month or more. Yet the question is sometimes asked: "If the short range forecasts, as provided by the Meteorological Office, are not always accurate, how is it possible to predict weather trends for periods of a week, a month or even a season ahead?"

This argument is not well founded. Long-range forecasting is very much like knowing the habits of a particular type of vessel at sea, carrying a known ballast. The ship will act for much of the time in certain predicted ways.

In the field of weather, the experts concerned find that, by studying the records of thirty or more past years of weather, they have a basis for analysing current weather conditions. By matching these weather sequences to similar ones of the past at regular intervals, the forecaster can find a basis for his predictions, and he can tell with a reasonable degree of certainty the paths that future depressions and anticyclones are likely to follow.

In any case, erratic as our climate undoubtedly is in many respects, it contains a number of regular and semi-regular features, which are of considerable use in forecasting.

A close study of our weather components shows that a rainy day, week or month is more apt than not to be followed by another rainy day, week or month. The same applies to fine, warm periods. Up to a certain point, the longer they last, the longer they are likely to continue. The theory is known by meteorologists as "persistence of type". The same thing is meant by the saying: "It never rains but it pours".

Commercial uses for meteorology are increasing almost every month. In Britain today there is a sharp upward trend in the amount of re-afforestation being carried out. Business men find that it is profitable to buy up poor woodland and scrubland and to plant young trees. It is long-term planning, but profitable nevertheless—always so long as there are not too many forest fires! These, of course, are almost a direct result of prolonged dry and hot weather, and may be an absolutely direct consequence. Forestry consultants are now known to use long-term forecasts in order to be prepared for emergency action to preserve their clients' property.

Aerial view of an industrial fog during the autumn and winter months. Sales of cough mixtures increase in direct proportion to the number of foggy days that occur.

Will there be a frost? Even the mildest weather can soon give away to sudden frosts, but advance warning is generally possible. To the commercial, long-range meteorologist, the shifting of an anticyclone from the North-east will spell danger in this respect, and his weekly or monthly trends may well indicate the increased danger from frost. Fruit growers are particularly keen to have this information during the critical spring months, when a single night's frost might be sufficient to cause irreparable damage.

MECCANO MAGAZINE

Junior Section

THE portrait on the right is that of an eager Dinky Toys collector who is also a pianist, and though only 11 years of age, has already given several recitals. He is Peter J. S. Pinto, who lives in Silva Porto, which is in Angola, on the west coast of Africa.

A Modern Marvel

Astronomical clocks, with all their delicate mechanisms and intricate designs, are sometimes regarded as relics of a bygone age. It is therefore something of a surprise to find that a new building in the City of London, a stone's throw from St. Paul's Cathedral, has just such a timepiece over the entrance doorway. Reader Frank Bunce has told me about it and sent the accompanying photograph.

Those interested will find this intriguing clock on the new office of the *Financial Times* in Cannon Street. It is about eight feet in diameter and, by means of a number of concentric rings, it shows the viewer the exact time in hours and minutes as well as the month of the year. Just outside the "flaming Sun", in the clock's centre, the signs of the Zodiac are marked to coincide with the appropriate months of the year. Forming part of the sunburst itself are slots showing the date and moon phases.

A firm of established London clockmakers, whose incorporation dates from the early seventeenth century, was instrumental in constructing the timepiece after two years had been spent by a director of the firm and his assistant in its actual design. And with reasonable maintenance, this modern marvel will keep going and retain its working accuracy until the year 2160 or so. And there are 1,200 separate parts in the mechanism!

There are many famous astronomical clocks in Germany, Switzerland and elsewhere in Europe, a notable example being that at Berne. A well-known English clock of this kind is that at Hampton Court Palace, made for Henry VIII by a French clockmaker.

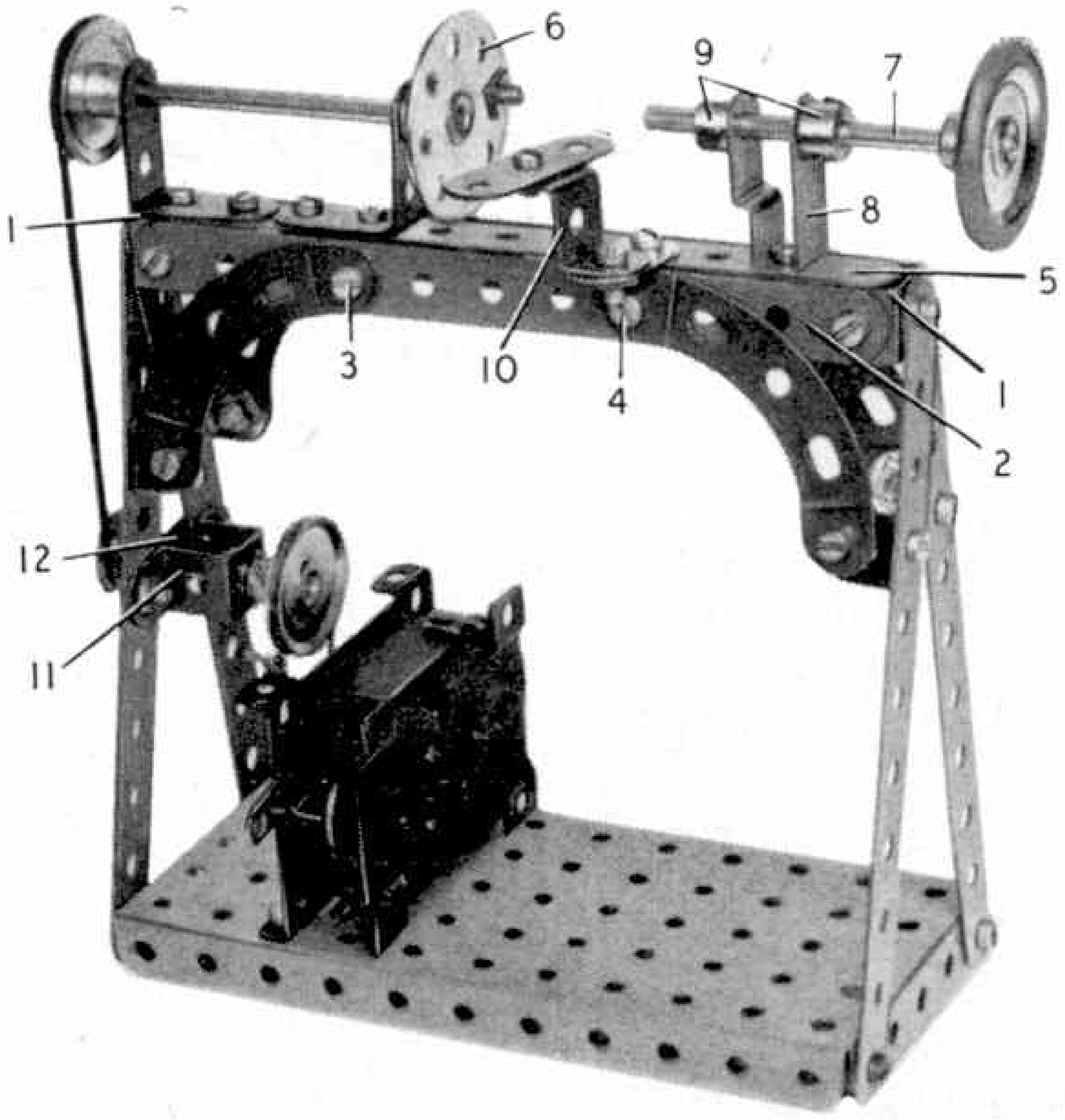


Fig. 1. A Magic Motor is used to drive this model Woodturner's Lathe, which is quite attractive to build and operate.

Spanner's Special Section for Juniors

Easy Model-Building

A Woodturner's Lathe

If you possess a *Magic* Motor, here is an interesting little model in which you can make good use of it. The model is the Woodturner's Lathe that is shown in Fig. 1 on this page. For the base of the model you will need a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate and to each end of this you must bolt two $5\frac{1}{2}''$ Strips as shown. At their upper ends these Strips are now to be bolted together to a Double Bracket 1, at each end of the model. To the lugs of the two Double Brackets now bolt a $5\frac{1}{2}''$ Strip 2 on each side. If you look at the illustration you will notice two bolts marked 3 and 4. Each of these holds in place one end of a $2\frac{1}{2}''$ Stepped Curved Strip, and on the inside, between the two $5\frac{1}{2}''$ Strips 2, the bolt holds also an Angle Bracket. To these Angle Brackets is bolted a third $5\frac{1}{2}''$ Strip 5 that forms the bed of the lathe.

The Bush Wheel 6 represents the face-plate of the lathe and it is fixed on a 3" Rod mounted in two $1'' \times 1''$ Angle Brackets bolted to the bed of the lathe. On the rear end of the Rod a 1" Pulley with boss is fixed. The tailstock spindle is a $2\frac{1}{2}''$ Rod 7 that is mounted in a Stepped Bent Strip 8, also bolted to the bed. A 1" Pulley fitted with Rubber Ring is fixed to the Rod to form a handwheel and two Collars 9 hold it in place in the Stepped Bent Strip.

A $1\frac{1}{2}''$ Strip fixed to a lug of a $\frac{1}{2}''$ Reversed Angle Bracket 10 forms the tool rest, and the other lug of the Reversed Angle Bracket is bolted to a Fishplate attached to the $5\frac{1}{2}''$ Strip forming the lathe bed.

The *Magic* Motor is bolted to the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate and the pulley on its driving shaft is connected by belt to a 1" Pulley fixed on a $1\frac{1}{2}''$ Rod. This Rod is passed through a Double Bent Strip 11 and the centre hole of a $1\frac{1}{2}''$ Strip 12 bolted to the $5\frac{1}{2}''$ Strips forming the left-hand leg of the machine. A Pulley with boss fixed on the outer end of the $1\frac{1}{2}''$ Rod is connected by a Driving Band, or a belt of Cord, to the 1" Pulley on the 3" Rod carrying the Bush Wheel.

A list of the parts required to build the Woodturner's Lathe is given at the end of this article.

Boxer Training

The base of this attractive model is a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate. To this at one end a Trunnion 1 is bolted. A second Trunnion is bolted to the first one and to the flange of this Trunnion a Flat Trunnion 2 is attached. Two $5\frac{1}{2}''$ Strips overlapped three holes are now bolted to the Flat Trunnion and at the upper end a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 3 is fixed, as in Fig. 2.

The punching ball is a miniature Loaded Sack, suspended by cord from the Double Angle Strip.

The body of the Boxer consist essentially

of a *Magic* Motor. To this the legs, formed by 2½″ Strips 4 and 5, are fixed. One of the Strips is bolted to an Angle Bracket fixed to the base, and the other is attached to the base in a similar manner, but in this case a Fishplate 6 is also secured in place by the same bolt. A Fishplate 7 is bolted to a lower rear lug of the Motor and to this a second Fishplate 8 is attached at right angles. A 2½″ Strip 9 is bolted to one of the lower front lugs of the Motor and a 2″ Rod 10 is passed through the centre hole in this Strip and also through the free hole of the Fishplate 8. This Rod is fitted with a 1″ Pulley 11, a second 1″ Pulley 12 and a Bush Wheel 13. A 2½″ Strip 14 is pivotally attached to the Bush Wheel by a lock-nutted ½″ Bolt so that the Strip is free to move. The other end of the Strip is fixed securely to one end of a second 2½″ Strip 15 and the other end of this Strip is attached pivotally by a lock-nutted bolt to a Double Bracket 16. The bolt is first passed through the Strip, a nut is then placed on it and the shank of the bolt is then pushed through the lug of the Double Bracket. A second nut is now placed on the bolt and the two nuts are tightened against the lug of the Double Bracket.

The right arm of the Boxer consists of

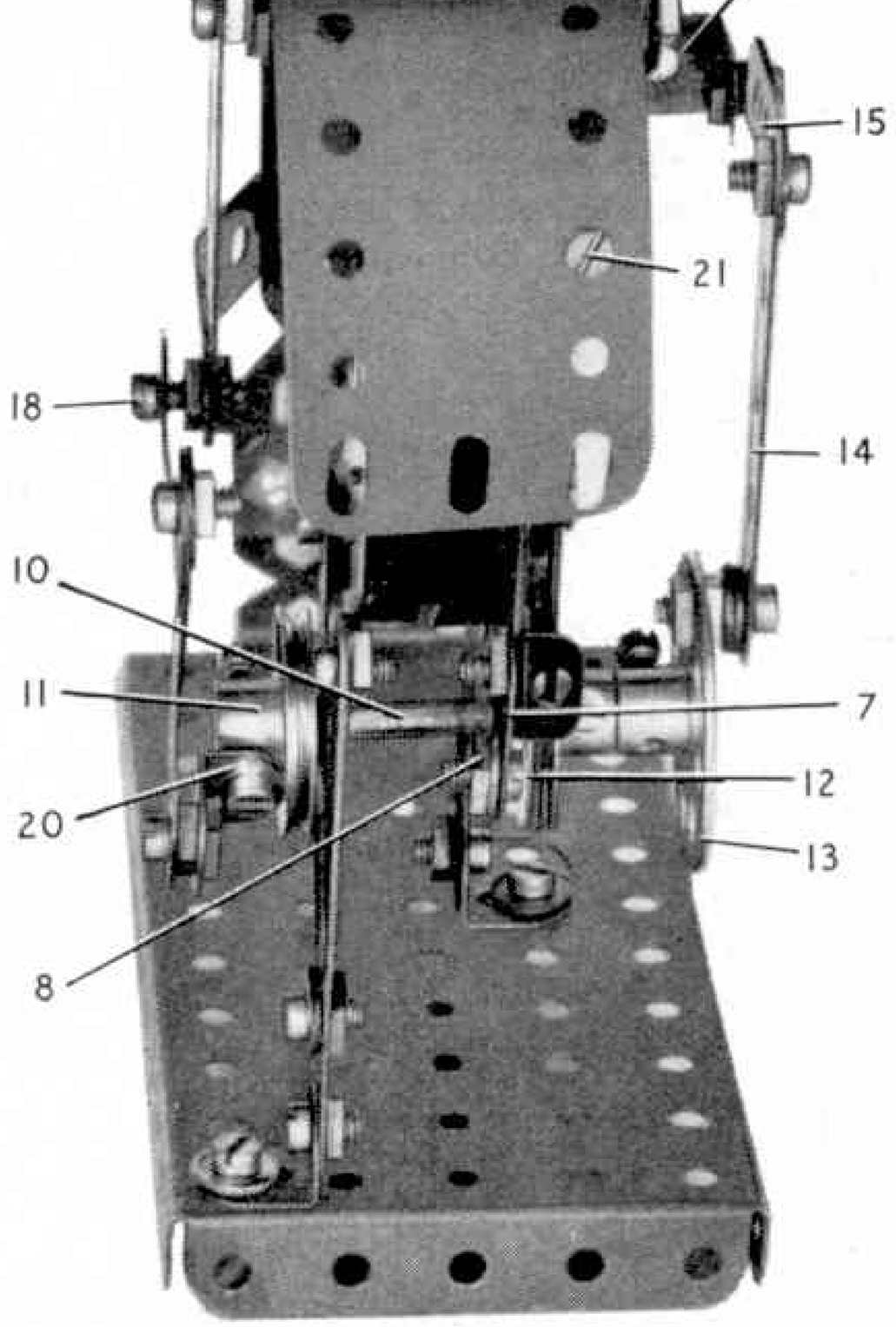


Fig. 3. A back view of the Boxer training.

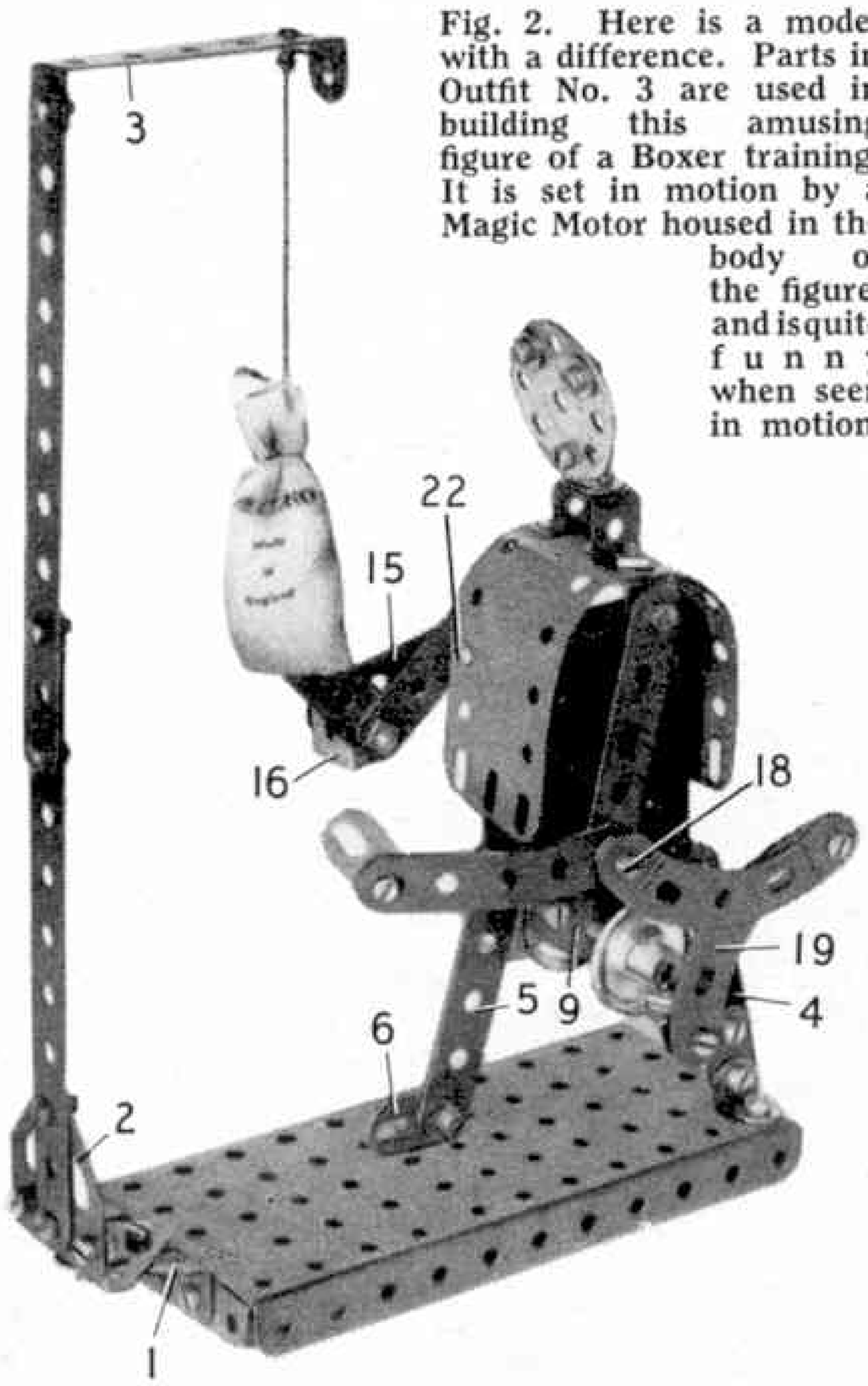


Fig. 2. Here is a model with a difference. Parts in Outfit No. 3 are used in building this amusing figure of a Boxer training. It is set in motion by a Magic Motor housed in the body of the figure, and is quite funny when seen in motion.

two 2½″ Strips each bolted at one end to the other lug of the Double Bracket. At the shoulder, the arm is pivotally attached to an Angle Bracket 17.

The left arm of the Boxer is constructed similarly but at the elbow the two Strips are attached to a 2½″ Stepped Curved Strip by a Bolt 18. The 2½″ Strips are fixed securely to the bolt by two nuts, but the Stepped Curved Strip is free to move on the bolt. The other end of the Stepped Curved Strip is tightly fixed to a second 2½″ Stepped Curved Strip 19. The other end of the latter is attached by a lock-nutted bolt to an Angle Bracket 20 that is fixed by a nut on a bolt screwed into the boss of the Pulley 11. The body of the man (*Continued on page 108*)

DINKY TOYS NEWS

By THE TOYMAN

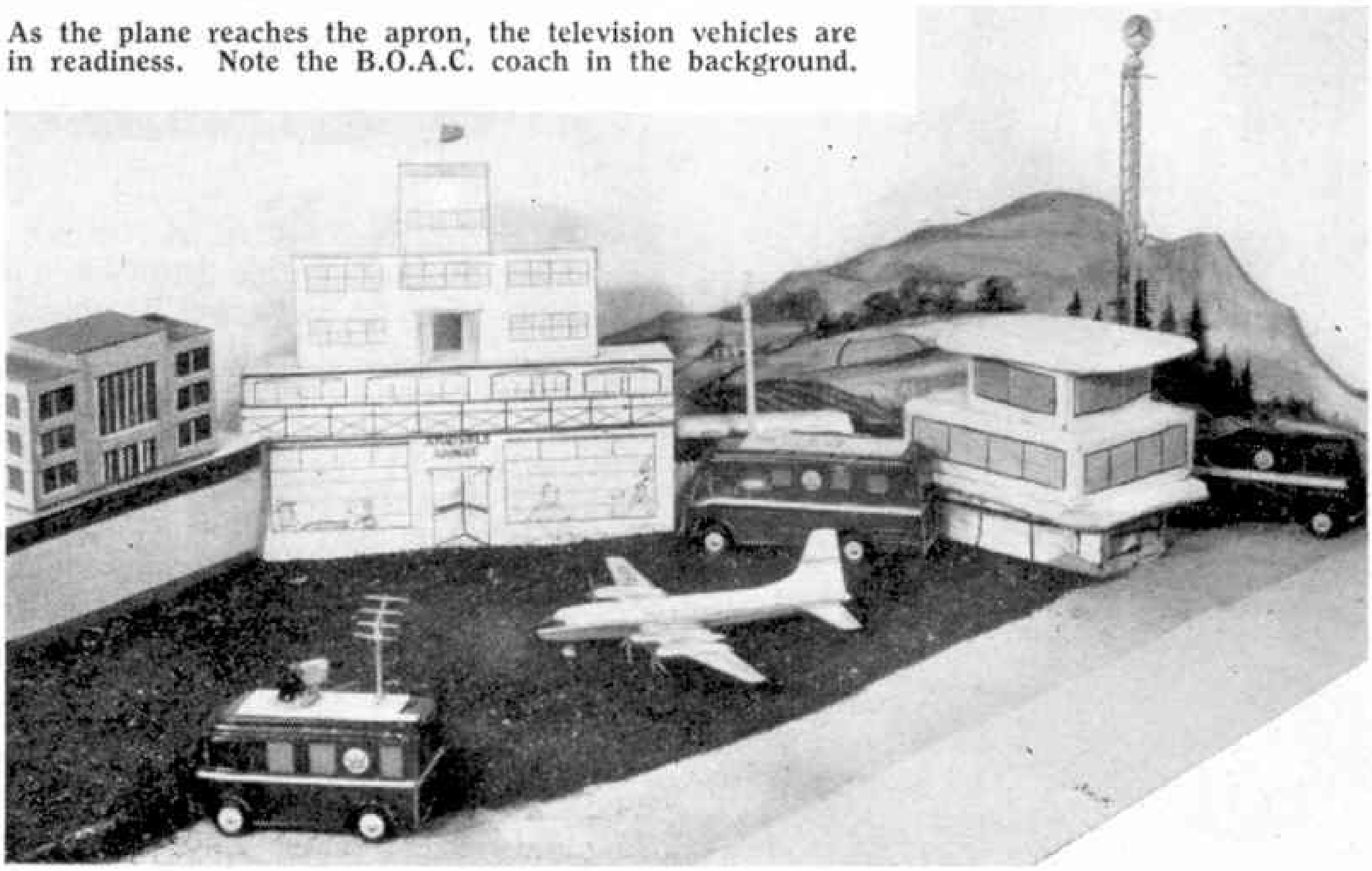
FEW Dinky Toys, I imagine, have captured the imagination of youngsters more than the fascinating trio of vehicles linked with B.B.C. television—the Roving Eye Vehicle, the Control Room and the Extending Mast Vehicle.

In large measure they appeal because they are part of a modern, virile age; they are a visible and constant reminder to the children who possess them of the immense progress mankind has made in this field of communication, and they are, in addition, a hint of the unconquered worlds that lie ahead.

But, of course, more than that they have a wonderful appeal for any boy or girl who has imagination, and what youngster has not? They can be used in so many ways as the "operating staff" set about recording pictures of the day that will be the history of tomorrow. With Dinky Toys available in such a wide range, all manner of scenes can be arranged for imaginary shooting. Car races or rallies make obvious pictures for collectors who have a selection of racing or tourist models, and much variety can be obtained, with thrills and spills arranged for the camera to "record". The TV trio can be used to excellent effect, too, with Hornby-Dublo Electric Trains as when, for instance, there has been a derailment—actual or engineered—and the highly-realistic Breakdown Crane, with its relieving bogies and match truck, has had to be brought into use.

The picture on this page shows another way in which the Dinky Toys television vehicles can be used. A V.I.P. from overseas is arriving in this country by air. Even before his plane touched down at the airport the Roving Eye Vehicle was there to capture the final moments of the flight. Now the plane has taxied off the runway, seen in the bottom right-hand corner of the picture, on to the apron in front of the terminal buildings, and the camera is once more in position to register the scene. In front of the control tower is the Mobile Control Room. The Extending Mast Vehicle, with paraboloid reaching into the air, is behind that building. Both these vehicles have an important part to play in

As the plane reaches the apron, the television vehicles are in readiness. Note the B.O.A.C. coach in the background.



Busy on its rounds, the Volkswagen Van takes an acute corner. Close by is one of the new Lamp Standards.

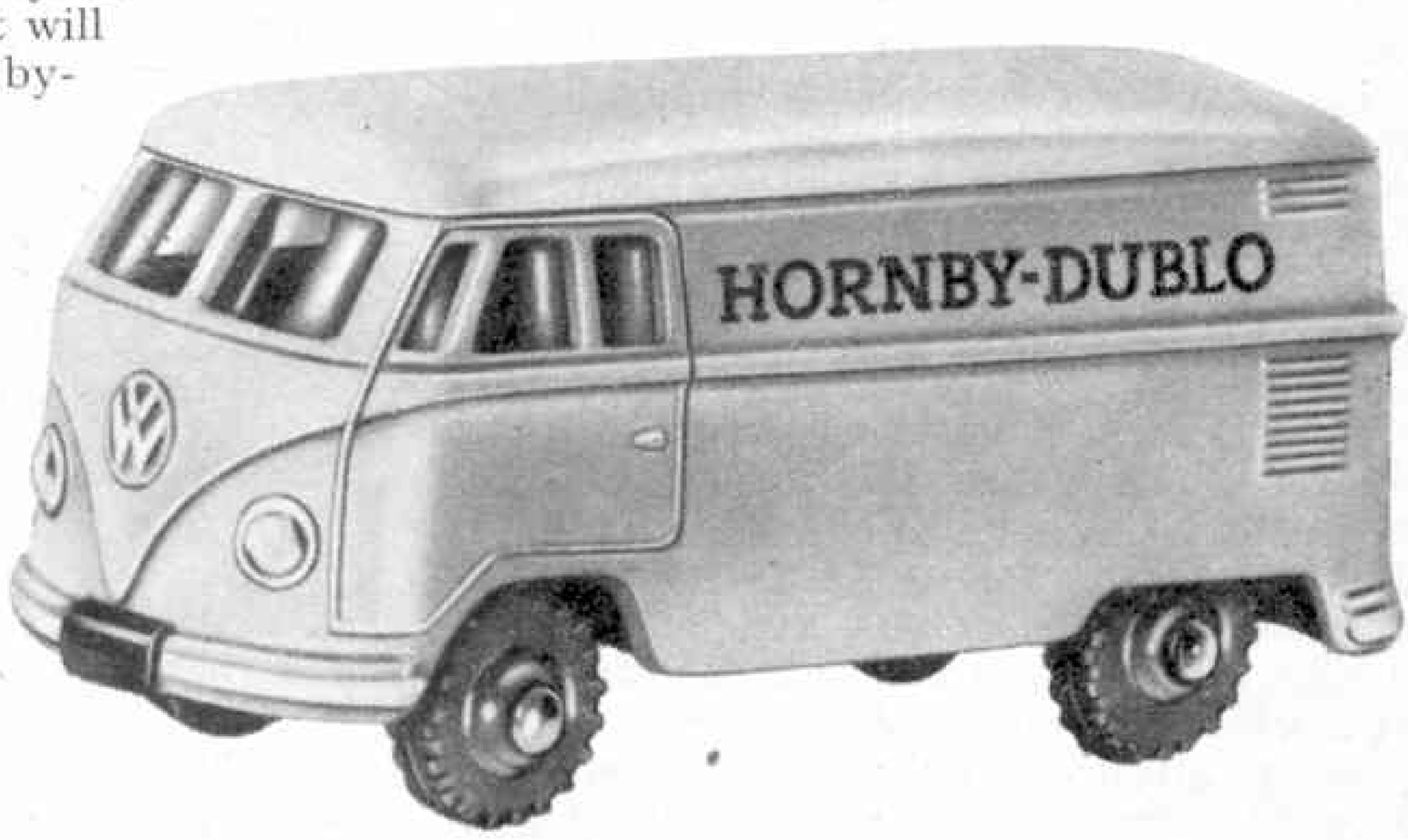
transmitting the pictures so that later, at the turn of a switch, viewers by the hundred thousand can watch the memorable scenes.

I hinted last month that quite a number of new models would be coming along for Dinky Toys enthusiasts. Those to reach the shops this month include a splendid addition to the Dublo Dinky Toys range. It is the Volkswagen Delivery Van, No. 071. This Van is based on a Volkswagen prototype used for a variety of purposes in industry. The actual vehicle can be ingeniously converted to serve as, say, a mobile workshop, a baker's delivery van, or a jobbing builder's van, etc.

The Dinky Toys model is of the standard van, made to Dublo scale. It will have windows in the driver's cab and a glazed window at the rear, and will be fitted with moulded wheels and tyres. Finished in pale yellow it will carry the words "Hornby-Dublo" in neat red lettering in the panels on either side.

Notice how realistic the new model looks in the top illustration on this page. Here, in a clean-looking, compact township on the fringe of the moors (it could well be one of the neat market towns of the North Riding or of North Wales), the Volkswagen Van is busy on its rounds. You see it in the centre of the picture taking the acute corner at a wide angle, ready, I suspect, to pull in to the kerb on the driver's right somewhere about the spot the taxi is just passing.

There is, in this picture, another point of special interest to all Dinky Toys collectors. It centres around the two Lamp Standards, the Single-Arm Standard to the right of the Volkswagen and the Double-Arm Standard in the street beyond. Both these are further new additions to the Dinky Toys range and will be enthusiastically welcomed, I am sure, by the hundreds of collectors who operate their own layouts. The Single-Arm Standard is No. 755 in the series and the Double-Arm is No. 756. Tall and elegant, in modern style, they have been designed for use with Dinky Toys, but, as you can see from the photograph, they can be used quite



The new Volkswagen Delivery Van, Dinky Dublo Toy No. 071.

The postman's knock at the door brought good news in December for Stephen Jones (above) and Christopher Parkinson, two of the month's winners in the Dinky Toys £2 Contest. Stephen, aged 7, lives near Wakefield; Christopher (10), comes from North Reddish, Stockport.

successfully with Dublo Dinky Toys.

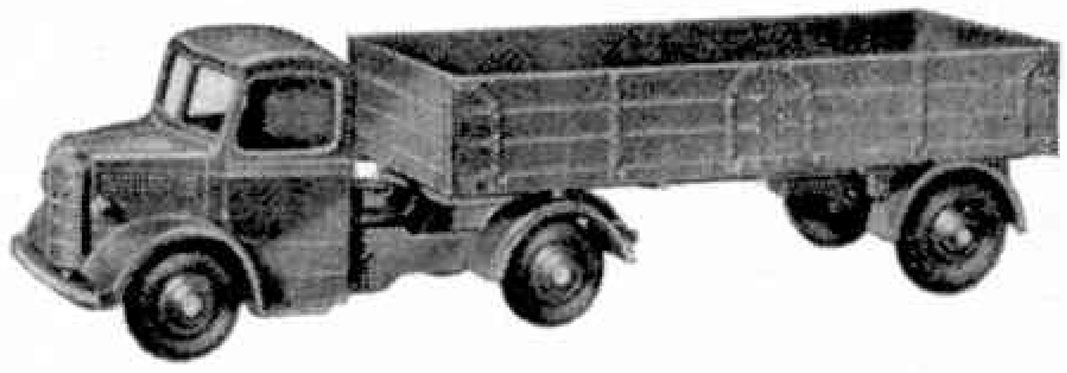
The Standards themselves are of plastic with a detachable grey metal base marked to conform with the popular Pavement Set. Two small holes are drilled in the base, on either side of the Standard, so that the fitting can be nailed or screwed down in the case of permanent layouts. The Standards are finished in stone colour, relieved by the aluminium-painted holders that carry the lamps. The lanterns themselves are meticulously marked in amber-tinted Polystyrene. On either side of the Standards are speed derestriction signs which are removable.

Many collectors have written to say how delighted they are with three of the Dinky Toys models, produced at the Meccano Works at Bobigny, Paris, which were made available in this country towards the end of last year. Now in the shops over here is another splendid model from the same Works. It is a private garage, modelled in plastic and fitted with a movable approach ingeniously designed to allow Dinky Toys to enter and leave automatically. The garage itself is 5½ inches long and nearly 3 inches wide and the overall length of the model (including approach) is just over 10½ inches. It is a fascinating toy neatly finished in blue and grey.

Now, may I compliment all who took part in our December "Spot the Errors" contest. There was a very good entry from competitors of varying ages, and the "spotting" was keen. Awards of 5s. each have been made to the following: Malcolm Wells, Luton; Michael Gorringe, Hounslow; Robin Armstrong, Nottingham; Michael Holliday, Northampton; John Scotney, Hull; John Rimington, London; Jim Nolan, Wexford, Eire; P. Morgan, Cardiff.

Dinky Rhymes

Dinky Rhymes, which first appeared in the *Meccano Magazine* last month, have certainly captured the interest of many readers. Here, two more favourite models are briefly described for you in verse:



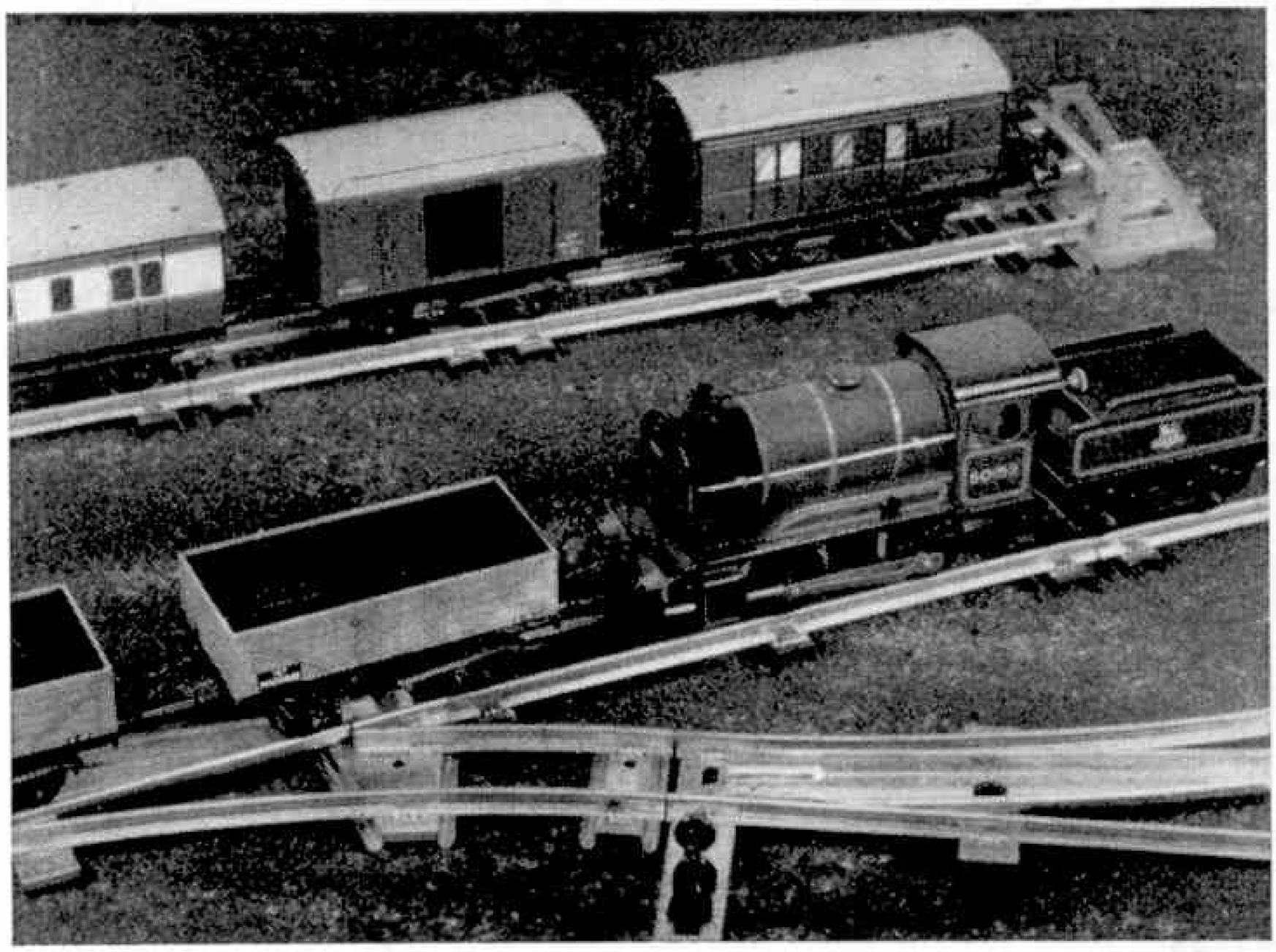
BEDFORD ARTICULATED LORRY (No. 409)

For handling freight of heavy weight
This wagon's celebrated;
The cab is sheer and clean and straight,
The truck articulated.

DAIMLER AMBULANCE (No. 253)

Quiet, sympathetic, swiftly sent
To accidents or crashes,
The ambulance, on mercy bent,
To hospital then dashes.

"Tommy Dodd" writes about:



Some Hornby Vans

FROM time to time in these pages I have told you something about the different items of rolling stock that are included in the Hornby range. For the benefit of younger members I should explain that the term "rolling stock" means any of the Hornby Coaches, Wagons and Vans—"trucks" I expect many of you call them—that are provided to make effective trains for your Hornby engines to pull.

As two of our pictures this month show various Vans belonging to the Hornby system, let us talk about these.

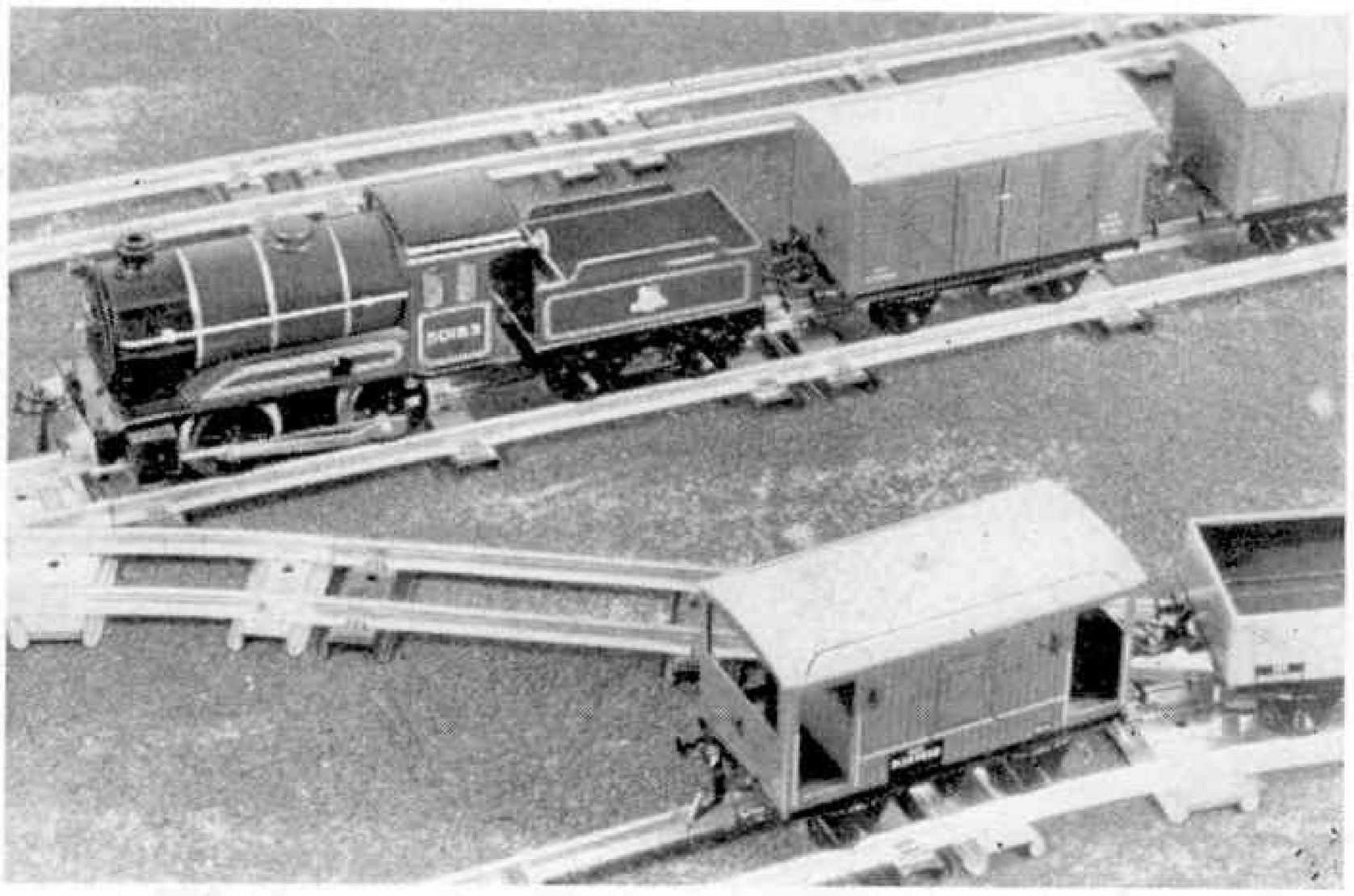
The B.R. Standard

Van for goods traffic is represented in the Hornby Gauge 0 system by the No. 50 Goods Van. Like all the No. 50 vehicles, it is strong and effective, and well suited to hard service on a gauge 0 railway. Apart from the tin-printed details on the body-work, which I am sure you all find attractive, something that must appeal to all of you is the fitting of doors hinged to open in pairs rather like cupboard doors, just as the real B.R. ones do. The doors are in fact shown in the open position in the No. 50 Van in the picture above. You do sometimes see real vans left in sidings and goods yards like this for one reason or another, so you can rightly do the same thing. But be careful to close the doors before the Van runs in a train!

In the picture above, various Hornby Vans appear on the background track. Notice how the doors of the No. 50 Goods Van are open, as they are sometimes left in real life.

The Hornby System also includes the No. 50 Refrigerator Van. It is of similar construction to the one just described, but is intended for meat traffic and other perishables of a similar kind. It looks very smart in its white finish, with grey roof, as the real ones do, at least when they are freshly painted. With either of these Vans you can have a tremendous amount of fun, because they can not only be included in your goods trains but also can be run attached to passenger trains if you want. I expect that most of you must have seen vans in passenger trains on real railways.

What is really a van, but oddly enough is often called a "truck", is represented by the Hornby No. 50 Cattle Truck, representing the B.R. Standard vehicle of this kind, for cattle and livestock traffic. This model



More Vans, this time with a Goods Brake Van in the foreground. This neat vehicle is a popular and necessary item of rolling stock.

does not have working doors, but its design differs from that of the other Hornby Vans because there are openings in the sides, as is usual in the real vehicles of this kind, so the "passengers" get plenty of fresh air!

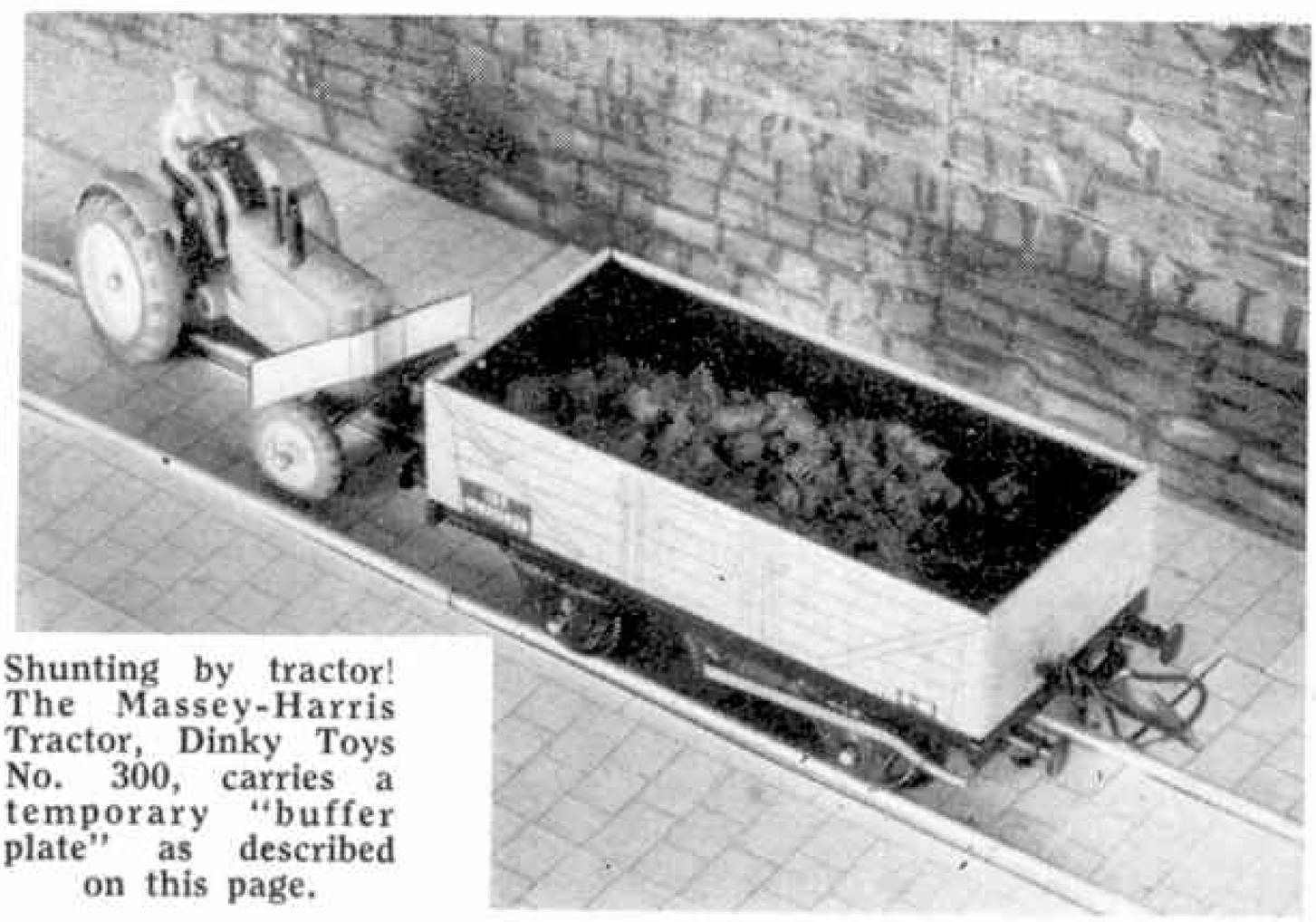
The Cattle Truck is not included in any of our pictures here, but another Van of a rather special kind, the Goods Brake Van, does appear in the upper illustration on this page. The Hornby Goods Brake is specially interesting as it has brackets at each end for the tail lamp, and on both sides for the side lamps, and the lamps are provided with the vehicle. This is a feature that many goods brakes I have seen on other miniature railways do not share, so you should be proud of your Hornby Goods Brake Van and be sure to look after the lamps. If you do manage to lose any of them—they are rather small anyway—replacements can be obtained.

There are two other Brake Vans in the Hornby System, both of them known as Passenger Brake Vans because they are used on passenger trains. One of each kind is shown in the illustration at the head of this talk, that next to the Buffer Stop being a No. 41 Passenger Brake Van, and the other, next to the No. 50 Goods Van, being a No. 51 Passenger Brake Van. They are similar to each other in construction, but the No. 51 represents a corridor-type vehicle for main line trains and is finished in B.R. red and cream. The No. 41 vehicle is plainer perhaps, but is still attractive, in its fine B.R. red finish.

Hornby passenger trains of No. 41 compartment or No. 51 corridor type Coaches can therefore be finished off appropriately with a suitable Brake Van. Another possible use for both these vehicles, and the Goods Van, is in the assembly of van trains for parcels or mail traffic and similar purposes.

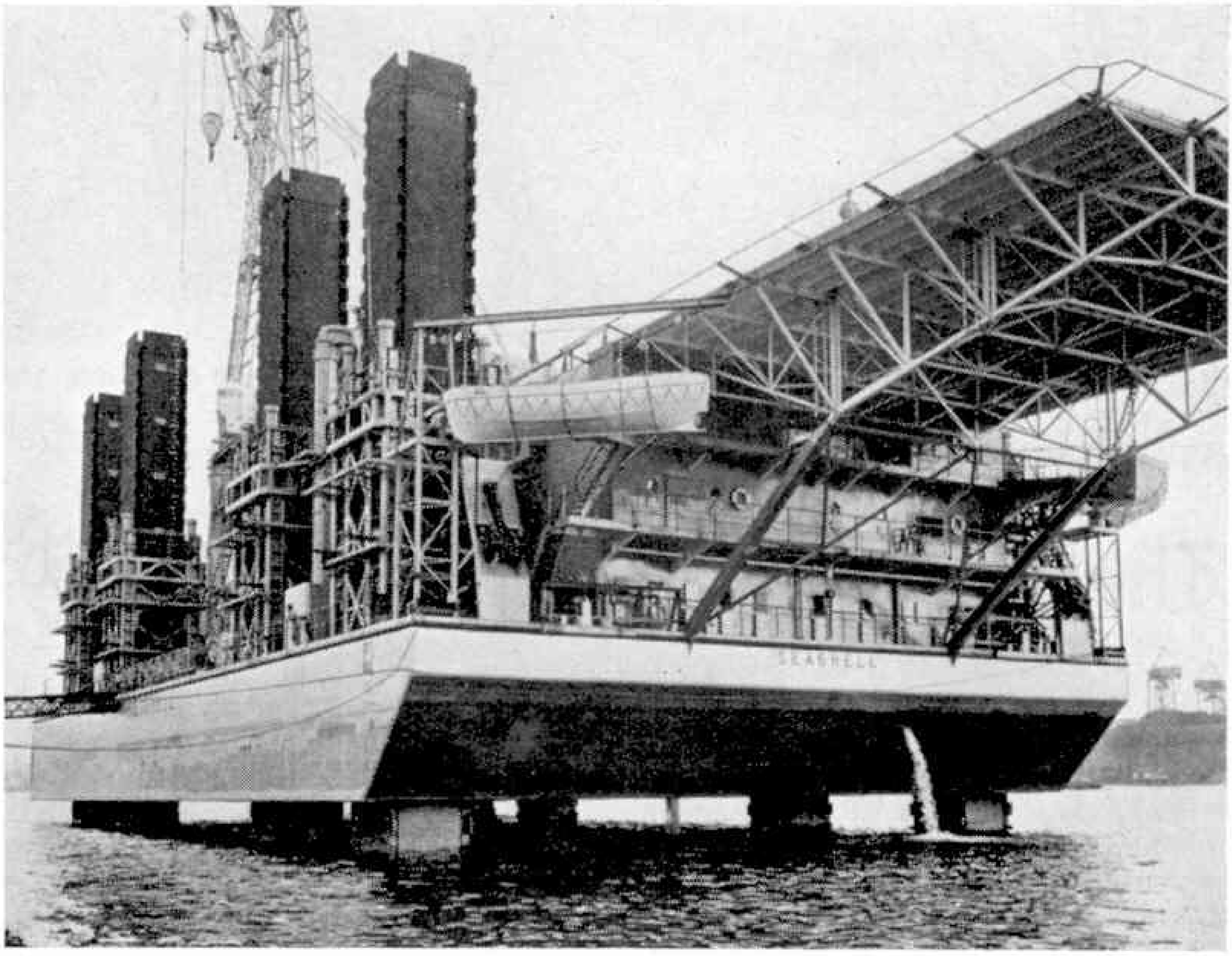
The scene below represents a works or industrial siding on a Hornby layout, and the yard has been paved with card strip or Dinky Toys Pavement Set components, because a Massey-Harris Tractor, Dinky Toys No. 300, is used in this yard for moving rail wagons. Rail or road wagons have sometimes to be moved for convenience in loading and general handling, and this kind of shunting tractor can handle either.

The Tractor shown has been adapted by the fitting of a "buffer plate" made of stout card cemented across the front at a height suitable for pushing against the couplings of Hornby Wagons.



Shunting by tractor! The Massey-Harris Tractor, Dinky Toys No. 300, carries a temporary "buffer plate" as described on this page.

Of General Interest



IN the *M.M.* for April 1958, the story was told of the wreck in the Persian Gulf of a gigantic Dutch Shell mobile drilling platform used in the search for oil under the sea. To replace it a new drilling platform, larger and stronger than the old one, was designed, and an artist's impression of this was one of the illustrations to the article already referred to.

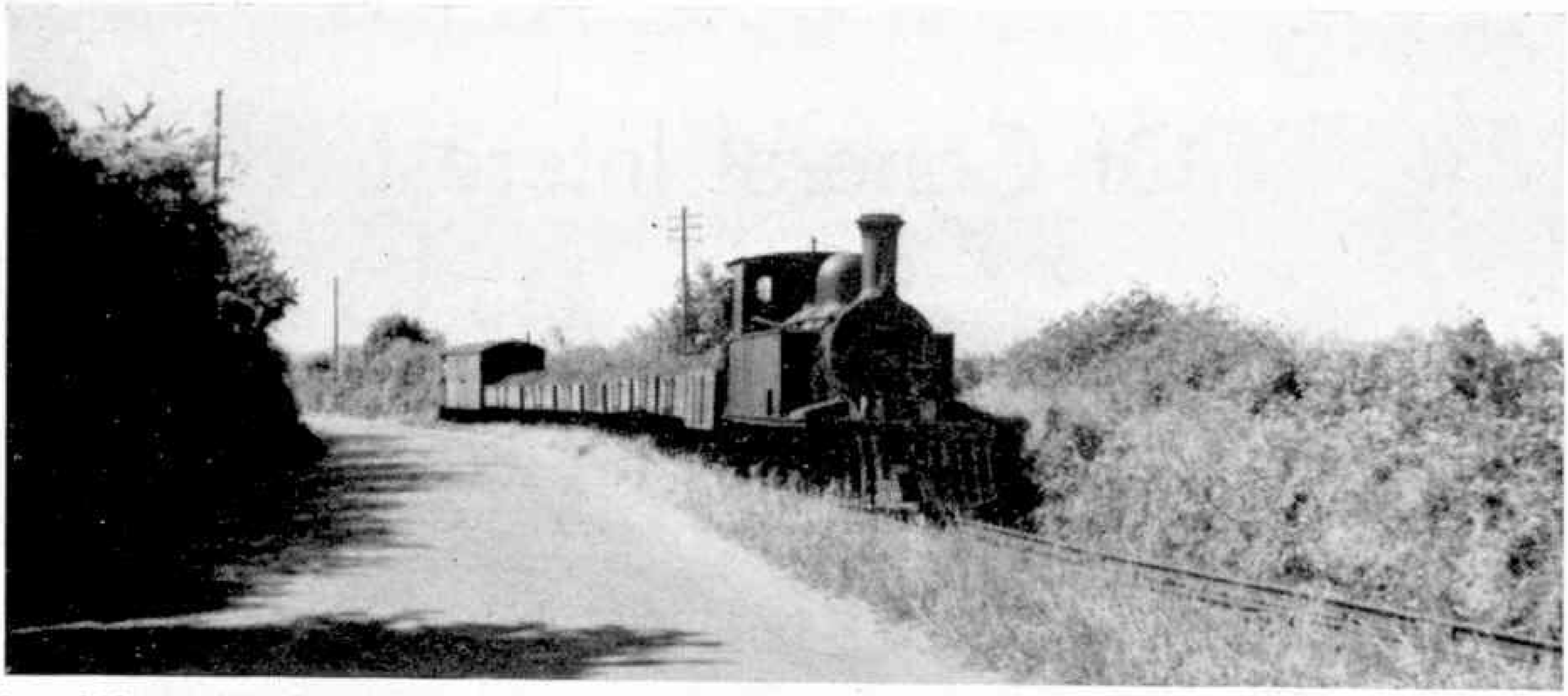
Now here, on this page, is a reproduction of a Shell photograph of the actual platform, which has cost nearly £2,000,000 to build. It was towed by two Dutch tugs on its voyage of about 6,500 miles from Schiedam, in Holland, where it was built by N. V. Werf Gusto, to the off-shore waters of the Qatar Peninsula, in the Persian Gulf.

The new 8,000-ton platform has been given the name *Seashell*. It has been designed to stand up to gales of 100 miles an hour, and to withstand waves 30 ft. high in water up to 90 ft. deep. The giant columns seen in the picture are legs that on the drilling site will be lowered to the sea bed. Beyond them can be seen the 75-ton crane, which provides for all necessary lifting of heavy equipment. *Seashell* also has a flight deck for helicopters, which will be used to transport members of the crew as well as supplies.

What is a Ramjet?

Briefly, a ramjet is the most efficient propulsion system ever devised. It allows flight speeds three or four times that of sound, that is up to 2,600 miles an hour, and it scoops up the air for burning the kerosene, or paraffin, used as fuel, compressing it by the ramming action caused by the immense speed attained. The fuel is injected automatically, and the high-speed jet of burning gases gives enormous speed.

Ramjets designed by the Marquardt Corporation, in California, are used now in American missiles of various kinds, and successors may some day be used in air liners that will be capable of flying from New York to the Pacific Coast in under an hour. They may be used too for boosting into orbit vehicles for interplanetary exploration.



A roadside scene on the Arigna Branch, with a coal train in charge of Cavan and Leitrim 4-4-0T No. 2. Photograph by Geoffrey Oates.

The Cavan and Leitrim Railway

By P. J. Lynch

TUCKED away among the peat bogs, hills and lakes towards the north west corner of the Irish Republic there flourished until recently the Cavan and Leitrim Railway, one of the most interesting of all the once-numerous narrow gauge systems in the British Isles.

The main line of the Cavan and Leitrim Railway was opened in 1887 and ran due north from Dromod, where connection was made with the Dublin–Sligo broad gauge line, to Ballinamore, where it turned eastward and continued to Belturbet to connect with the Great Northern Railway of Ireland. This is a sparsely inhabited, comparatively wild stretch of country, and most of the stations were no more than crossing keepers' houses, but Ballinamore, just half-way along the 35-mile main line, is a town of upwards of a thousand inhabitants. Here, in the early days of the railway, the General Manager had his offices, and here too were the repair shops and engine shed. The passenger station comprised two through platforms connected by a footbridge—a rarity indeed on a narrow gauge railway—and a bay platform for branch trains.

The 15-mile long Arigna branch, as it was called, opened in 1888 and ran westward from Ballinamore via Drumshambo, a town of comparative size, to a tiny isolated terminus some distance from Arigna village. Nearby are Ireland's only coal deposits, but although coal traffic was to provide the railway's main source of revenue it was not until 1920 that a mineral extension was opened from Arigna station to the mines.

It was the Arigna branch which gave the Cavan and Leitrim its unique character, for it was a true steam tramway, the last in these Islands to provide passenger services. The line ran beside the Ballinamore–Drumshambo–Arigna road for several miles, following its switchback course up hill and down dale without recourse to earthworks. The official speed limit of trains along this section was 12 m.p.h., but this was often exceeded by a handsome margin on the downhill stretches.

The line crossed the road several times, usually at dangerous corners, and here the speed limit was reduced to 4 m.p.h. Several stations were shown in the timetable, but some of these were no more than a name-board in the hedgerow.

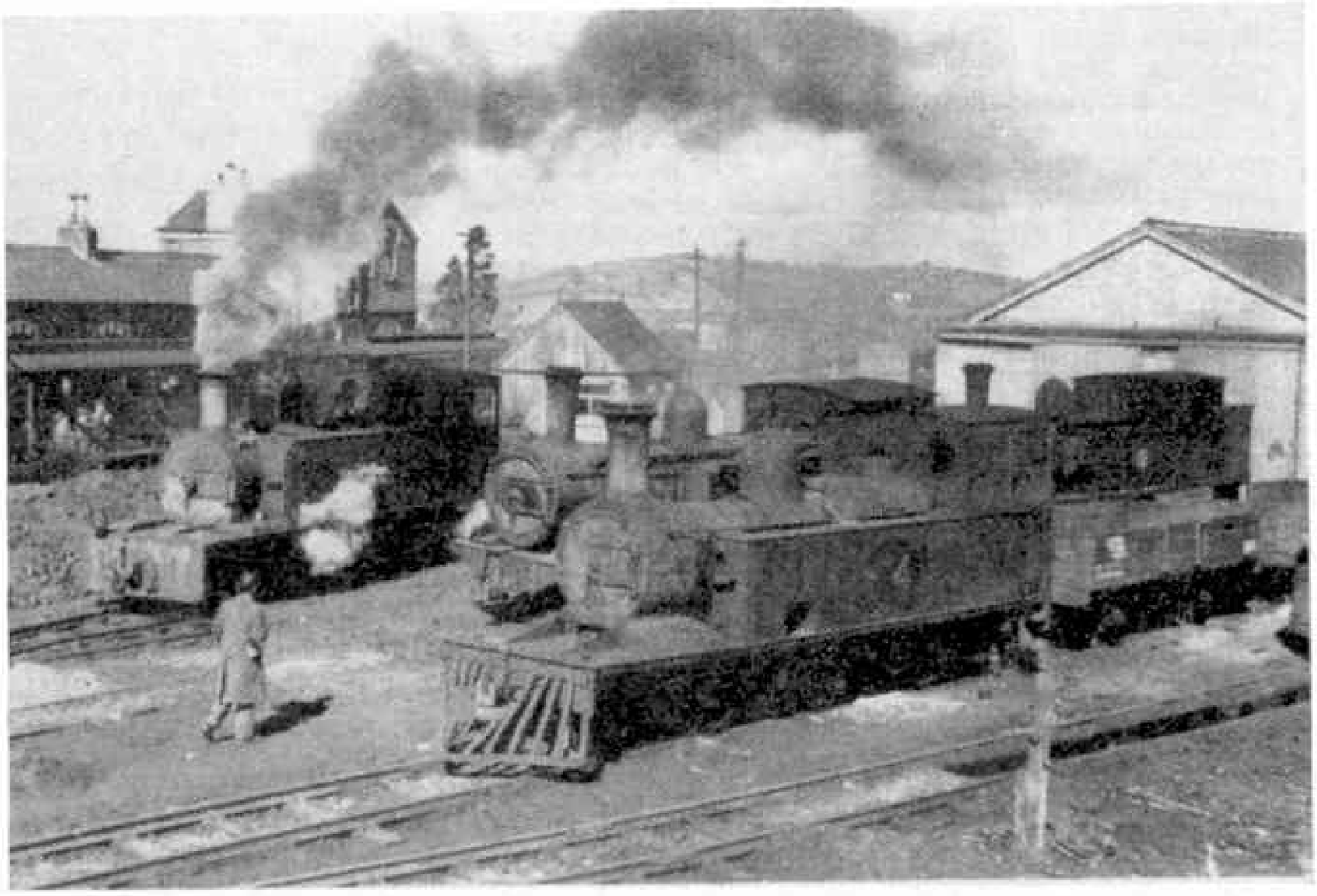
For the opening of the Cavan and Leitrim Railway eight 4–4–0 tank engines with 3 ft. 6 in. coupled wheels and weighing 26 tons were built by Robert Stephenson & Co. All had large buffer-beam cowcatchers, which they retained to the end, and all carried names until after 1925, when the line was almalgamated with the then Great Southern Railway. After that only the first, *Isabel*, kept its name and the engines

A roadside stopping place, with ex-Tralee and Dingle 2-6-2T No. 5T at the head of the train. The vehicle next to the engine was converted from two bus bodies.

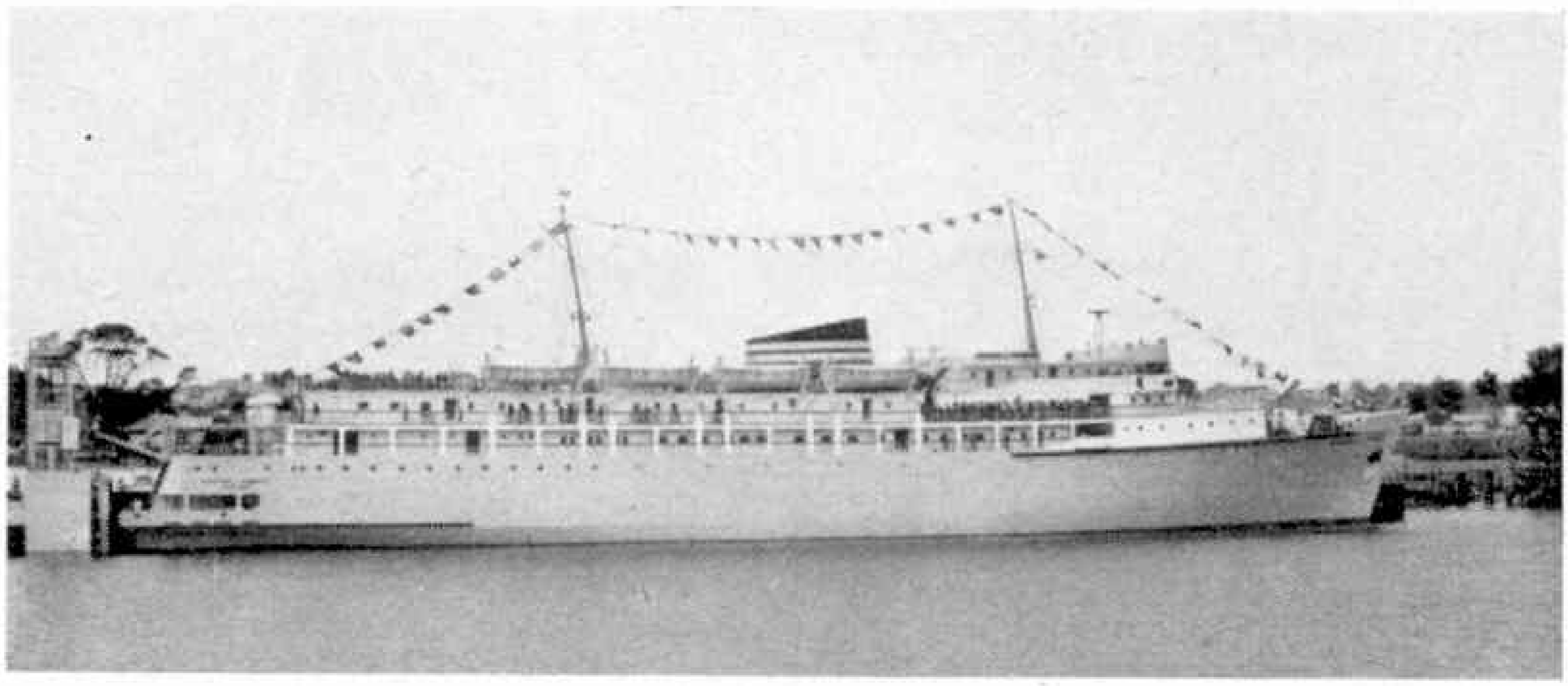
became Nos. 1L to 8L. These and No. 9L, a short lived 0–6–4 tank, worked all the traffic until 1934. Then four very speedy 2–4–2 tanks from the defunct Cork, Blackrock and Passage Railway were sent to Ballinamore to assist in working the output of coal. These had been built in 1899 and became Nos. 10L to 13L.

They were followed during the second World War by Nos. 3T and 4T, two vintage 2–6–0 tank engines from the distant Tralee and Dingle Railway. The final additions to the motive power were, respectively, Nos. 5T, a 2–6–2T and 6T, a 2–6–0 tank, also from the Tralee and Dingle. Ten of this veteran selection of engines were still at Ballinamore shed at the end of the railway's existence.

The active coaching stock included at least two of the original centre-gangway vehicles with end verandahs, together with an aged Tralee and Dingle coach and a comparatively modern vehicle built from the bodies of two road omnibuses. Goods vehicles were also of considerable interest, wagons from various Irish narrow gauge lines having been drafted in over the years. Several of the earliest wagons had the initials C. & L.R.R. on their axleboxes and these letters were the last reminder of the original title Cavan, Leitrim and Roscommon Light Railway and Tramway Company Limited. Alas for this grandiose title, the promoters' schemes were curtailed, nevertheless the C. & L.R. was a lively concern and performed prodigies of haulage during the Arigna mines peak output during the 1940s. The railway was closed, regrettably, on 31st March, 1959.



A variety of engines at Ballinamore, including a 4-4-0T, two 4-4-2T and a 2-6-2T. The photographs on this page are by the author.



The Searoad

New Vehicular Ferry between Melbourne and Tasmania

By Robert Garvie, B.Sc., M.I.C.E.

IT is usually considered that for economical operation a vehicular ferry vessel must work over a short sea route, with a quick turn-round time in port. An obvious and possibly ideal example is the crossing between England and France, 22 miles of sea route, occupying little more than an hour. A ship designed for a crossing of ten times the distance is therefore of more than usual interest to all sea transport authorities and others concerned with nautical affairs. Such a vessel is the *Princess of Tasmania*, which in October 1959 entered service on the important route across the Bass Strait between Melbourne, on the Australian mainland, and the northern Tasmanian terminal of Devonport.

The *Princess of Tasmania* was designed and built in Australia, at the State Dockyard in Newcastle, New South Wales, for her owners and operators, the Australian National Line. She is of 4,780 tons gross, and has a yellow hull, a white superstructure a squat black funnel with the Line's red, white and blue bands, and two stumpy masts. She has no hatches, and so carries no derricks.

The main purpose of the *Princess* is to transport vehicles and passengers between Tasmania and the mainland, and the need for such a vessel has been increasingly felt as more and more people have become owners of cars, and as more and more people take to the road for their annual holidays. Tasmania is a tourist island, as well as a State with important agricultural and industrial activities, and all the year round there is a two-way flow of traffic, with peaks at the holiday seasons. This traffic will now be able to travel throughout on wheels, without any kind of handling or transfer at the terminal ports. The new service is well named *The Searoad*.

The splendid vessel in the picture at the head of the page is the "Princess of Tasmania", a new vehicular ferry plying between Melbourne and Devonport, Tasmania. She is seen here on arrival at Devonport, on the completion of her maiden voyage across the Bass Strait. She is of 4,780 tons gross, and has a capacity of at least 100 cars and other vehicles, and ample accommodation for passengers.

The most important feature of the *Princess of Tasmania* therefore is the car deck, which is 358 feet long and 58 feet wide, with a capacity of at least 100 ordinary sedan cars of the 15-20 h.p. class. Any standard type of road vehicle can be carried, from lorries and trailers to caravans, "bubble" cars and motor cycles. In addition, hinged flaps, rather like bunks, can be let down from the bulkheads to increase the capacity if required. When necessary the lighter cars will be placed on these "shelves".

The entry port is in the stern, closed by a massive steel door hinged at the top. A full deck of cars can be loaded in well under an hour, and it is expected that practice and experience will reduce this figure to

nearer fifteen minutes. Cars are driven on or off at the terminals by their owners themselves, and the principle of operation is "first on, first off" with one exception—a mail van will always be last on, and first off.

With so much space in the hull devoted to vehicles, the cabin accommodation is necessarily limited. One hundred and seventy-eight persons are accommodated in single, two and four-berth cabins, and 156 can rest in lounge chairs of aircraft pattern in lounges and saloons. Meals are served in cafeteria style for simplicity and economy of space.

The *Princess* has twin screws, and is engined by two Polar diesels, each of 4,300 horse power, giving her a top speed of 20 knots. In addition, she has a Voith-Schneider bow propeller and twin rudders to assist in manœuvring while berthing. There is no time to be lost on a daily turn-round schedule!

The Bass Strait, between Tasmania and the mainland of Australia, is notorious for rough weather and a vicious short choppy sea with a cross swell. From the landlubbers' point of view, it provides just about the most unpleasant and uncomfortable experience of sea travel anywhere in the world. To eliminate this terror, or to reduce it to the maximum possible extent, the designers have equipped the *Princess* with Denny-Brown stabilisers, and it is stated that they will reduce rolling to a mere 3 or 4 degrees on either side of the vertical.

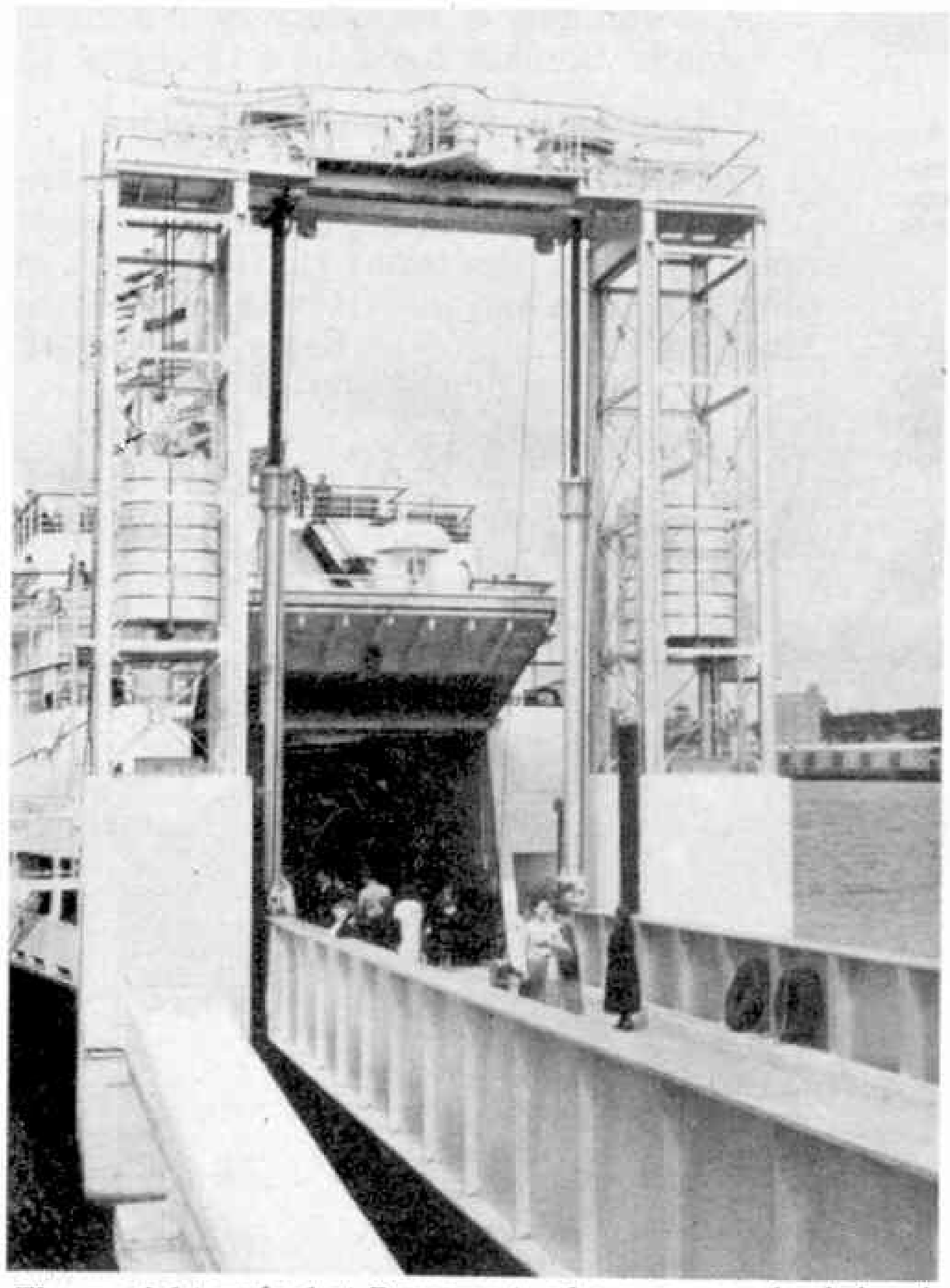
The distance across the Strait is 230 miles, and the time of the passage is 14 hours from cast-off to tie-up. The normal service is thrice weekly in each direction.

Bearing in mind the length of the crossing, the prices charged are interesting, not to say highly creditable, to the Line and to all who have organised the new service. A five-seater car of the 15-20 h.p. class is carried there and back in either direction for £24 in Australian currency, that is, at the rate of just over a shilling a mile. By contenting himself with a lounge chair, the driver can travel one way for £3 17s. 0d., a fare that includes his breakfast.

Australia is often described, and with justice, as the most air-minded country in the world; air travel is the normal experience, rather than the occasional thrill, to millions in the big island-continent, and one reason is that the air fares are comparatively low, and well within the reach of Mr. Everyman's pocket. It is not expected therefore that travellers will forsake the air services for the new *Searoad*, nor is it the aim of the Line to attempt to persuade people to do so. The *Princess of Tasmania* indeed will attract a new kind of tourist—the family with its own car, perhaps with a trailer caravan as well. Business men and salesmen with exhibits also will find it convenient to cross the water with their own cars or vans.

Merchants have already started door-to-door deliveries between island and mainland, using both containers and lorries, and this has reduced freight charges on many commodities. Tasmanian growers have despatched potatoes and apples direct by through road vehicles from their farms to the markets of Sydney and other towns, to the advantage of both farmer and customer.

A second vessel, the *Bass Trader*, is to join the *Princess of Tasmania* this year on the run across the Strait, and her duty will be confined to goods traffic by commercial vehicles and containers. The importance of these vessels to an island community cannot be over-emphasised.



The special terminal at Devonport, where cars are loaded and unloaded at the stern of the Princess.

Among the Model-Builders

By "Spanner"

A Four-Wheel Steering Mechanism

In answer to many recent enquiries I am illustrating in Fig. 1 a simple type of four-wheel steering gear suitable for model vehicles of medium size. Many young model-builders are interested in four-wheel steering, and although this particular design

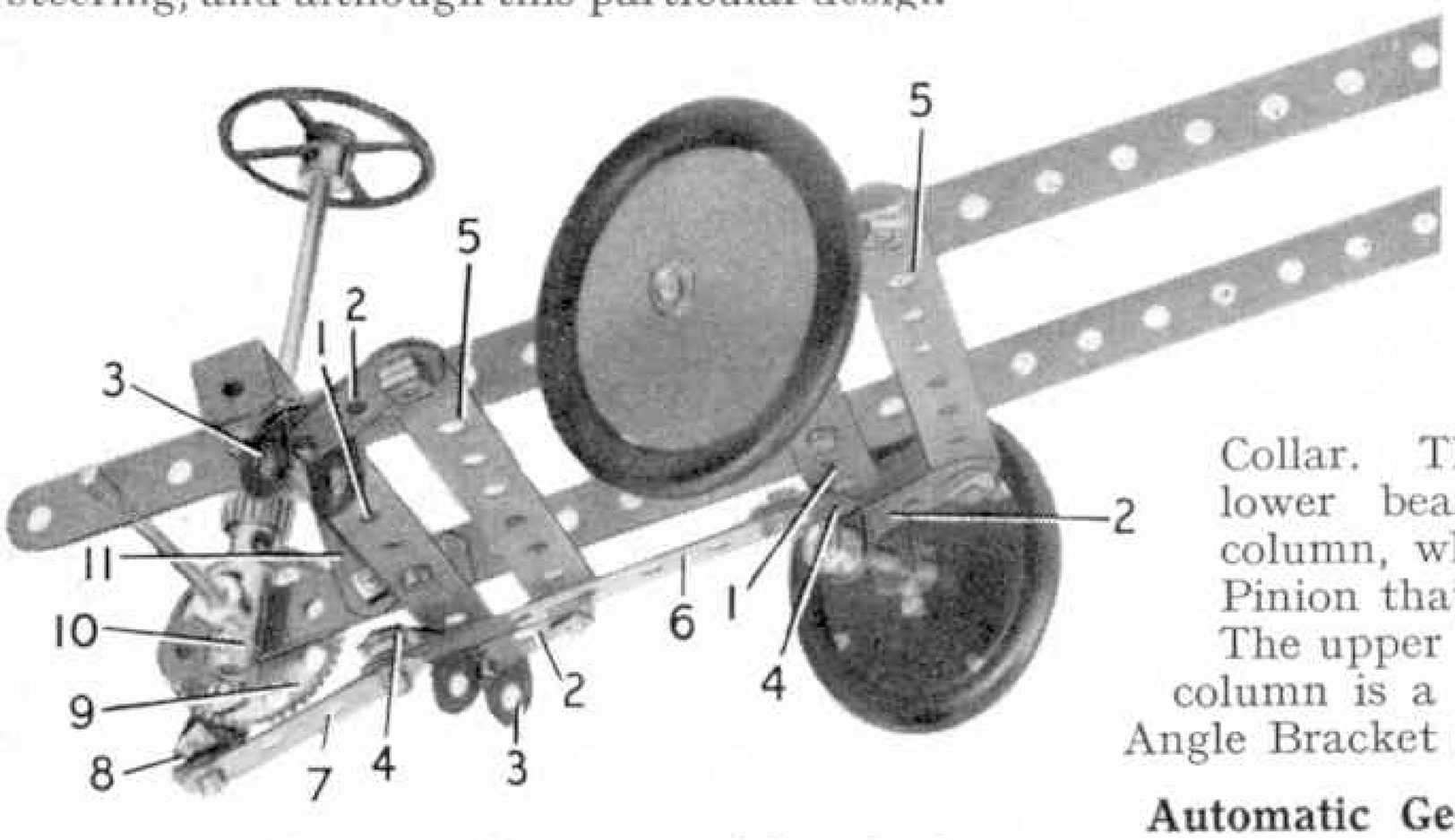


Fig. 1. One of the many simple types of four-wheel steering mechanisms that can be built from Meccano. This example is specially suitable for medium-size models.

appeared in the *Meccano Magazine* some years ago this repeat description is sure to be of interest to younger model-builders who did not see the original.

The steering assemblies for the two sets of wheels are similar in construction, and in each case the axle beam consists of a 4½" Strip 1 bolted to a Double Angle Strip fixed across the chassis. A ⅜" Bolt is passed through a 1½" Strip 2 and a Double Bracket 3, and these parts are clamped tightly together by a nut. The Bolt is then passed through the axle beam and is fitted with lock-nuts so that it pivots freely. A similar assembly is fitted to the other end of the axle beam, but at this end a second 1½" Strip 4 is held tightly on the ⅜" Bolt, at right-angles to the first 1½" Strip. The free ends of the Strips 2 are lock-nutted to a Strip 5.

The ends of Strips 4 are linked by a 3½" Strip 6, which is attached by lock-nutted bolts. A ⅜" Bolt is used at the front end of Strip 6, and a 2" Strip 7 is also pivoted on this Bolt. The Strip 7 is lock-nutted to an Angle Bracket 8, which in turn is lock-nutted to a Fish-plate bolted tightly to a 1½" Contrate 9.

The Contrate 9 is fixed on a Rod mounted across the chassis, and a Coupling 10 is slipped on it and held in place by a Collar. The Coupling forms the lower bearing for the steering column, which is fitted with a ½" Pinion that engages the Contrate. The upper bearing for the steering column is a Fishplate bolted to an Angle Bracket fixed to a 1½" Strip 11.

Automatic Gear Change Device

The mechanism shown in Fig. 2 is an Automatic Gear Change Device which operates when the input shaft changes its direction of rotation. It was devised by Mr. Ronald Wild, Wyke Regis, Weymouth,

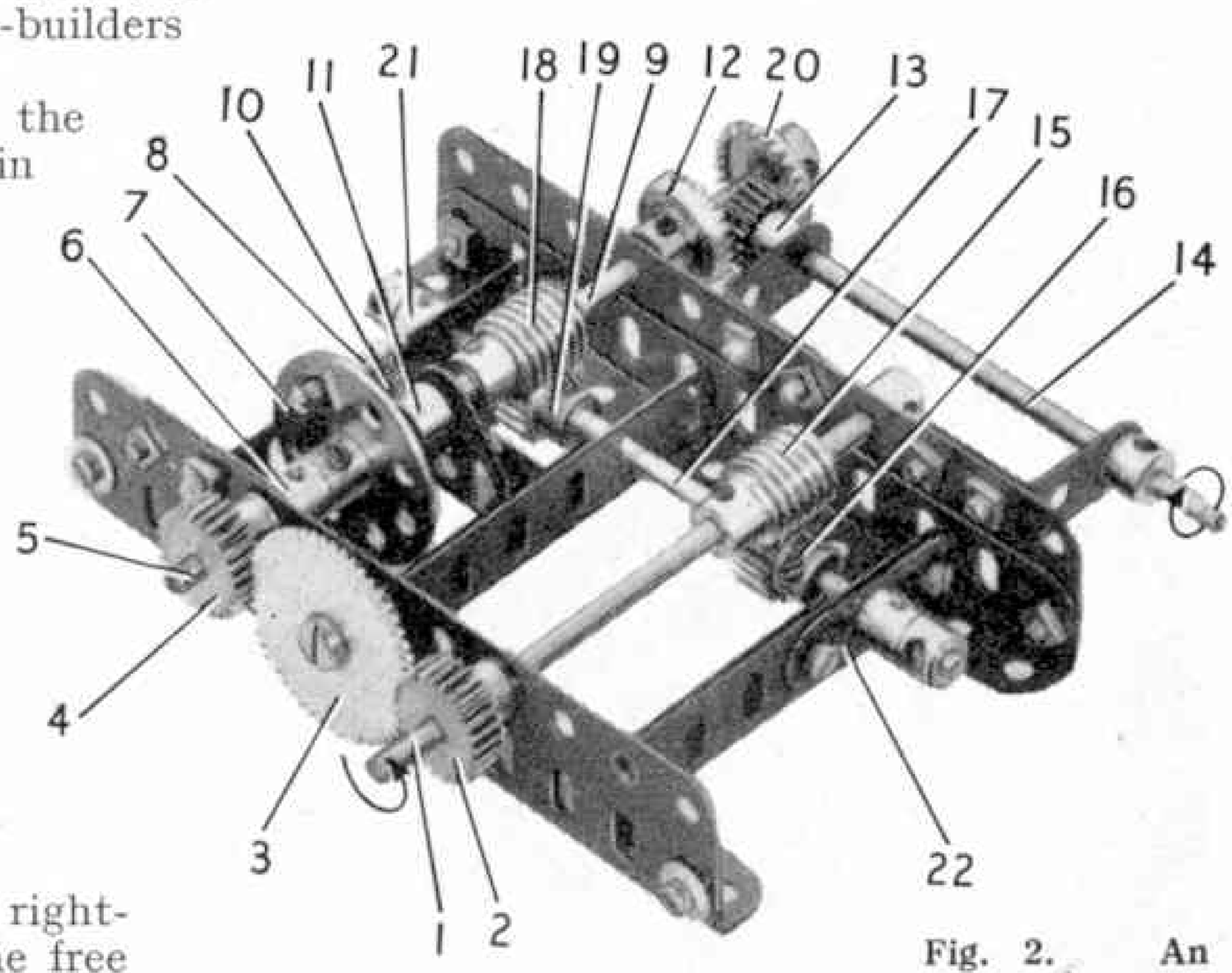


Fig. 2. An automatic gear change device designed by Mr. Ronald Wild, Wyke Regis, Weymouth.

as an entry for a recent "*Mechanisms*" Competition.

The drive is taken from the driving shaft 1 by the ¾" Pinion 2 through the idle 50-tooth Gear 3 to a ¾" Pinion 4 fastened to shaft 5, which is journalled in the boss of a Crank 6. Fastened on this Rod is a Bush Wheel 7 carrying a Threaded Pin 8, which transmits the drive to Rod 9 carrying Worm 18, by striking against the ⅜" Bolt 10 screwed into the Collar 11. The Contrate Wheel 12 on the outer end of Rod 9 meshes with Pinion 13, and thus drives Rod 14. The Contrate 20 is fastened to Rod 9 so that it is just out of mesh with ½" Pinion 13 when Contrate 12 is fully engaged. On the Rod 1 is a Worm 15 that meshes with a 19-tooth Pinion 16 fixed on Rod 17. The Worm 18 fixed on Rod 9 drives a 19-tooth Pinion 19, which is also fastened on Rod 17. This Rod is journalled in the bosses of Cranks 21 and 22, so as to give an adjustable mesh to the Worms and to cut backlash to a minimum.

Note that Contrate 12 and Collar 11 do not at any time butt against the Flat Girder or the Trunnion to which they are adjacent, but are positioned so as to leave Rod 9 free to move endwise except for the restraint exercised by the mesh of Worm 18 with Pinion 19.

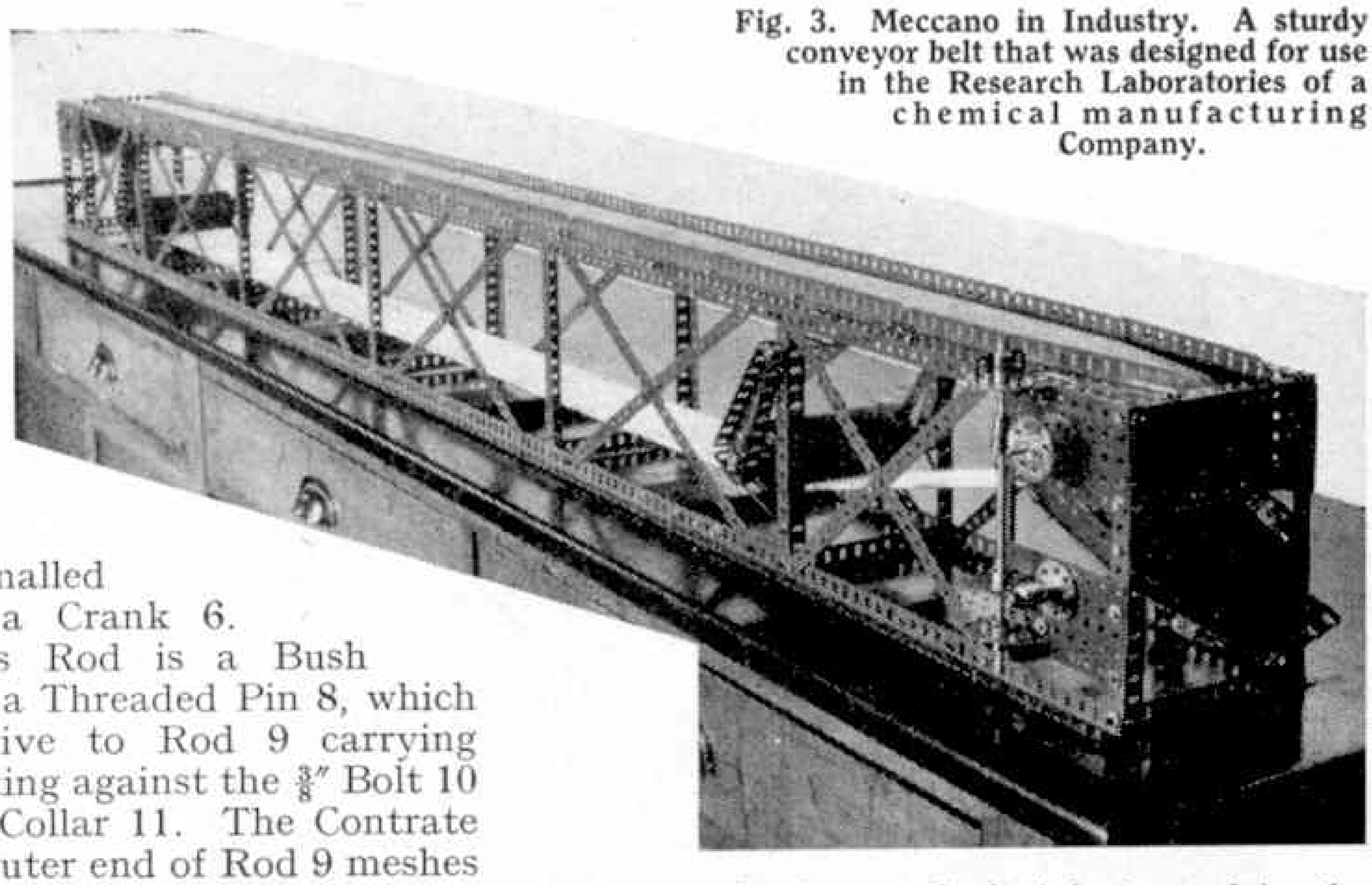


Fig. 3. Meccano in Industry. A sturdy conveyor belt that was designed for use in the Research Laboratories of a chemical manufacturing Company.

When the input shaft 1 is turned in the direction indicated the Contrate 12 is in mesh with Pinion 13, and Rod 14 turns in the direction shown. If the direction of rotation of the input shaft is changed the Threaded Pin 8 comes out of contact with Bolt 10, and while the input shaft completes one revolution shaft 9 is stationary radially. Meanwhile Worm 15 is turning Pinion 16, and Pinion 19 acts on the stationary Worm 18 as if it were a rack and moves Rod 9 axially, thus disengaging Contrate 12 and engaging Contrate 20. Threaded Pin 8 now contacts the other side of Bolt 10, driving shaft 9 and Worm 18. The Worm now ceases its axial motion since it is being driven at exactly the same speed as Worm 15, and though Pinion 19 is still rotating, the Worm 18 is being rotated in synchronism via the Gears 1 and 3. The net effect of all this is that although shafts 1, 5, 9 and 17 have changed direction, Pinion 13 is now being driven by Contrate 20, and shaft 14 is still rotating in the same direction that it was before reversal of the input took place.

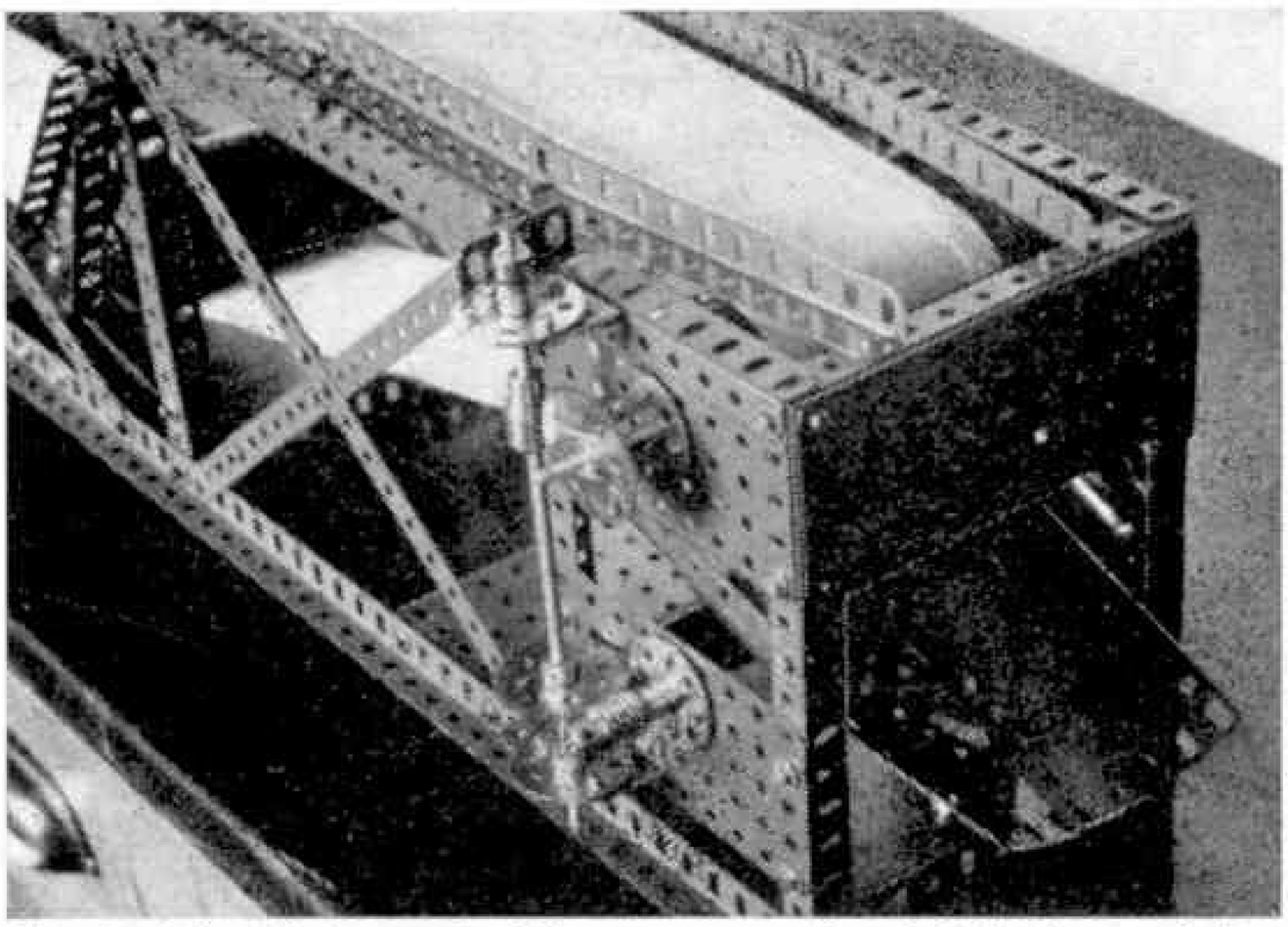


Fig. 4. The driving end of the conveyor, showing the transmission gearing, which is planned to give the belt a speed of from 2 to 12 in. per min. when operated by a motor provided with variable speed control.

Meccano in Industry

An interesting industrial application of Meccano is seen in the neat belt conveyor illustrated in Fig. 3. The photographs from which our illustrations are produced were sent to us by Dr. Wm. Mitchell, the Chief Chemist of a large and well-known firm of manufacturing chemists, who designed and built the conveyor for use in the (*Cont. on page 108*)

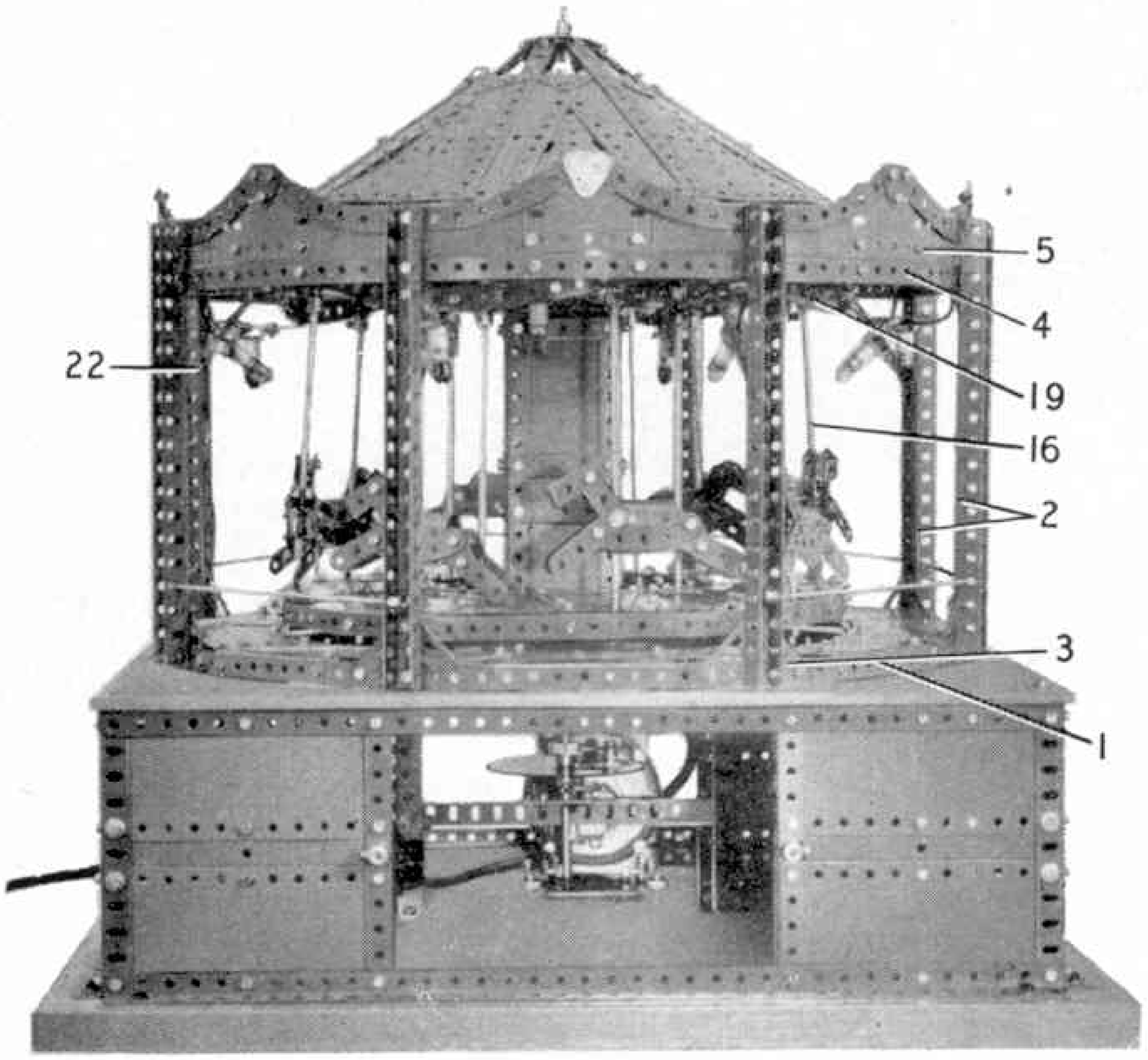


Fig. 1. A model Carousel that has proved very attractive when displayed in Meccano dealers' windows.

A Model Carousel

NO doubt many readers will have seen the model Carousel that has been on display in many Meccano dealers' premises for some time. This model has attracted considerable public interest and consequently we have received many enquiries for details of its construction. We are therefore giving some details of the model here for the benefit of any readers who may wish to build a version of it for themselves. We must point out, however, that the original dealer's model was powered by a special High Voltage Motor, this being necessary in view of the fact that these display models have to stand up to continuous operation without attention over a period of many months. However, for ordinary use the model can be powered by an E15R Motor fitted in the base and suitably connected by gearing or Chain and Sprocket drive to the centre shaft of the model. The model as described here does not include the lighting arrangements.

The base of the model is constructed from Angle Girders and it measures 18½" long × 18½" wide × 5½" high. It is plated in with Flexible Plates of various sizes and a circle of 4½" Strips and 3½" Angle Girders 1 is bolted to the top of the base. Eight columns 2, each consisting of two 9½" Angle Girders (Fig. 4), are bolted round the circle as shown and they are each braced at their lower ends by a 2½" Triangular Plate 3. The mounting platform is made up from 3½" × 2½" Flexible Plates bolted to each other and to the Angle Girders.

Fig. 2. The centre column of the Carousel.

The upper part of the stationary superstructure is made up of 7½" Strips 4, bolted to the 9½" Angle Girders, and Flexible Plates 5 are bolted above the Strips. An edging formed from Curved Strips completes this part of the model.

A circle of 5½" Curved Strips 19 (Fig. 4) bolted together to form an undulating ring as shown, is connected to the 9½" Angle Girders 2 by means of 2½" × ½" Double Angle Strips 20. Two Washers separate the ring from the Double Angle Strips, which are supported by 3½" Strips 22 slightly bent at each end and bolted to the 9½" Angle Girders.

The central tower (Fig. 2) is in the form of a square and is built from 7½" and 2½" Angle Girders. A Ball Thrust Race Toothed Disc 6 is fixed to the 2½"

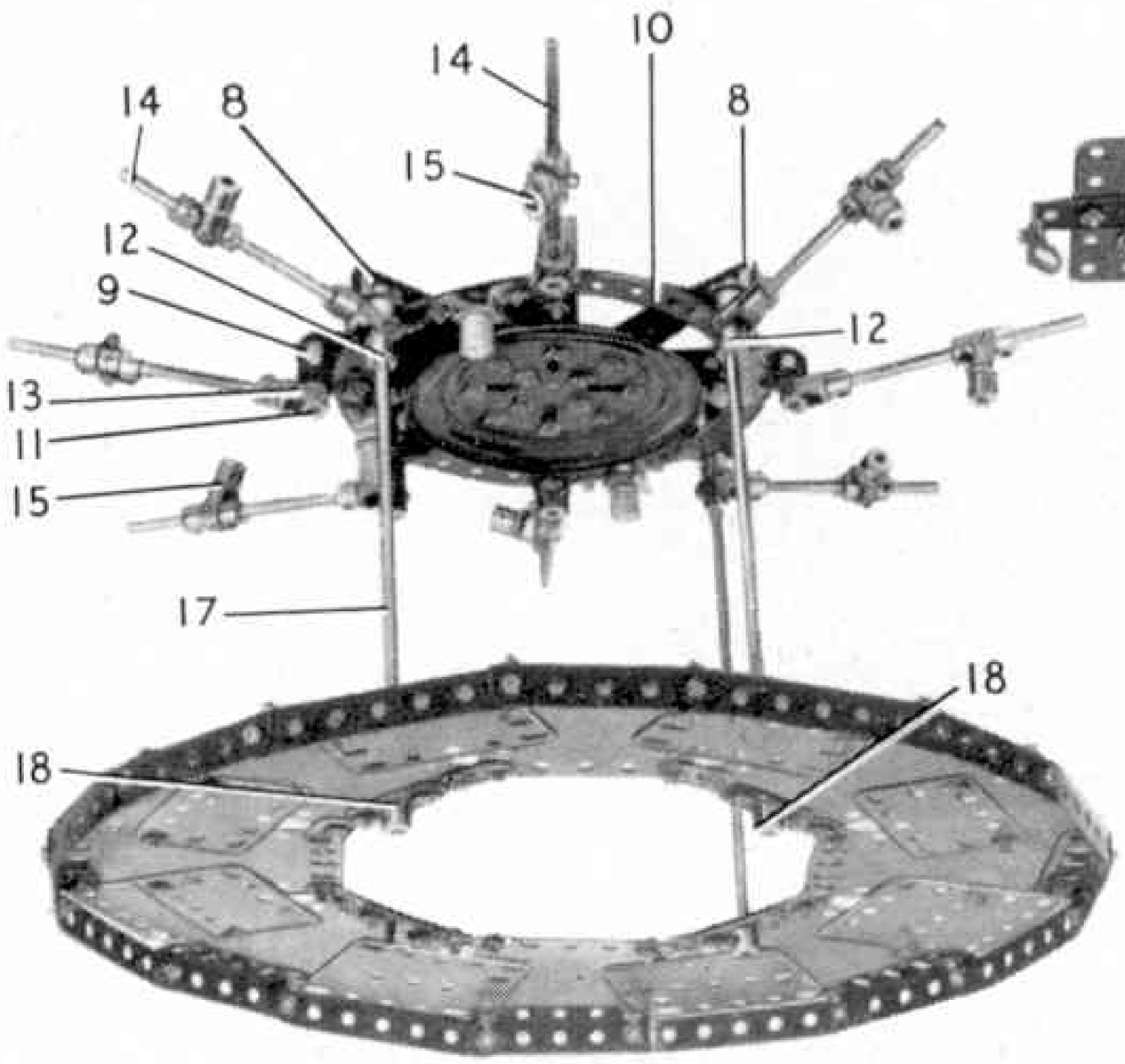
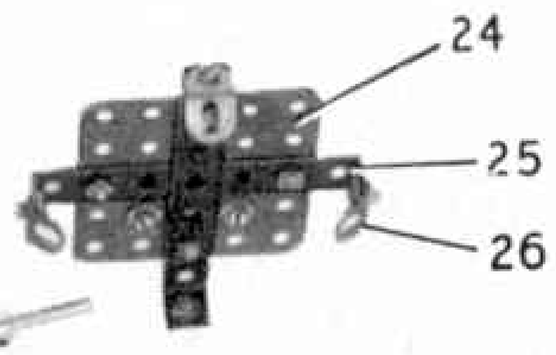


Fig. 3. The rotating platform of the Carousel and the radial arms that carry the Rods on which the horses are mounted.

Angle Girders at the upper end and a Wheel Disc 7 is bolted at the centre of the Disc to provide a bearing for the centre shaft.

Four 3″ Angle Girders 8 (Fig. 3) are bolted to the round holes of a Ball Thrust Race Flanged Disc and a 2½″ Angle Girder 9 is bolted to each of the slotted holes of the Flanged Disc. The Angle Girders are linked to one another by a ring made of Curved Strips 10. A Crank 11 is bolted to each of the 2½″ Angle Girders with its boss on the outside, and a Coupling 12 is held on a ⅜″ Bolt at the outer end of each of the 3″ Angle Girders. A Fork Piece 13 is connected to the boss of each Crank and a similar part is also fixed to the centre hole of each Coupling. A 4″ Rod 14 is fixed in the boss of each Fork Piece and each Rod carries two Collars, one on each side of a Swivel Bearing 15. The outer ends of the Rods 14 rest on the ring 19. Eight 8″ Rods 16 are held in the bosses of the Swivel Bearings and at their lower ends they protrude into the slotted holes of the 2½″ Flexible Plates of the platform.



The horses are built up as shown and are fixed to the 8″ Rods 16. The inner edge of this platform forms a ring of eight 2½″ Strips connected together by Fishplates at the inner end. The outer edge is made up from 3½″ Strips and 2½″ Angle Girders bolted together. The 3½″ Strips are slightly bent so that the required shape is obtained. Four 8″ Rods 17 are held in the Couplings 12 and they are fixed in the bosses of four Double Arm Cranks 18 bolted underneath the platform. When the rotating structure is assembled in place the 4″ Rods 14 bear on the curved built-up ring 19.

The ribs of the canopy (Fig. 4) consist of 9½″ Strips edged by 3½″ and 2½″ Strips and filled in with Plates. A Bush Wheel 27 with eight holes, is attached to the top of the canopy ribs by Obtuse Angle Brackets 28. A 2½″ × 2½″ Plate 24 (Fig. 3) is bolted to two Double Angle Strips 25. Obtuse Angle Brackets 26, which are bolted to each of the lugs of the 3½″ × ½″ Double Angle Strips, are bolted in turn to the canopy ribs at the fourth hole from the centre.

The model can be powered by an E15R Electric Motor situated inside the base in a suitable position to transmit its drive to the compound centre shaft of the model, which is fixed in the boss of the Ball Thrust Bearing. The horses are fixed to the 8″ Rods held in the bosses of the Swivel Bearings.

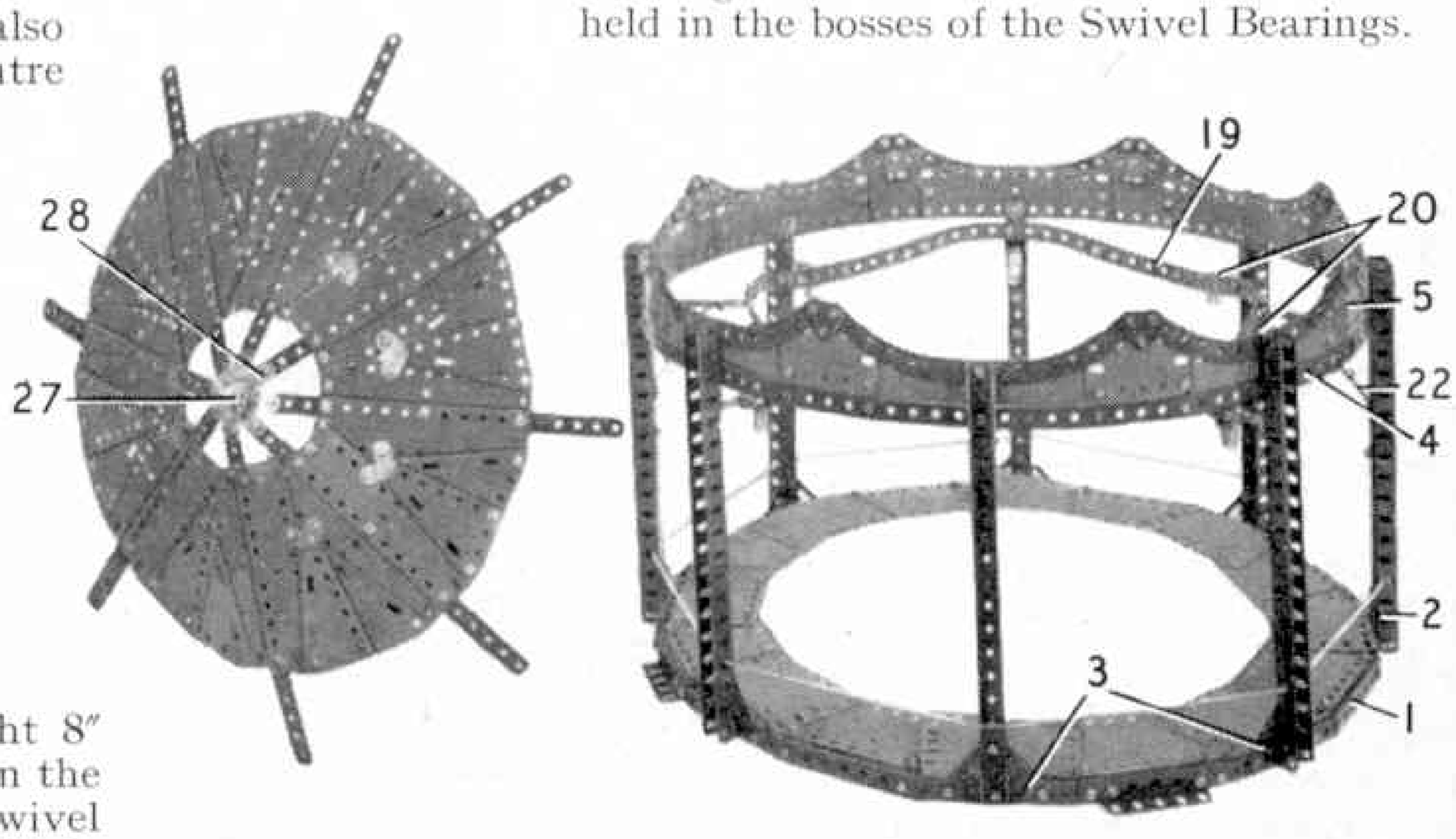
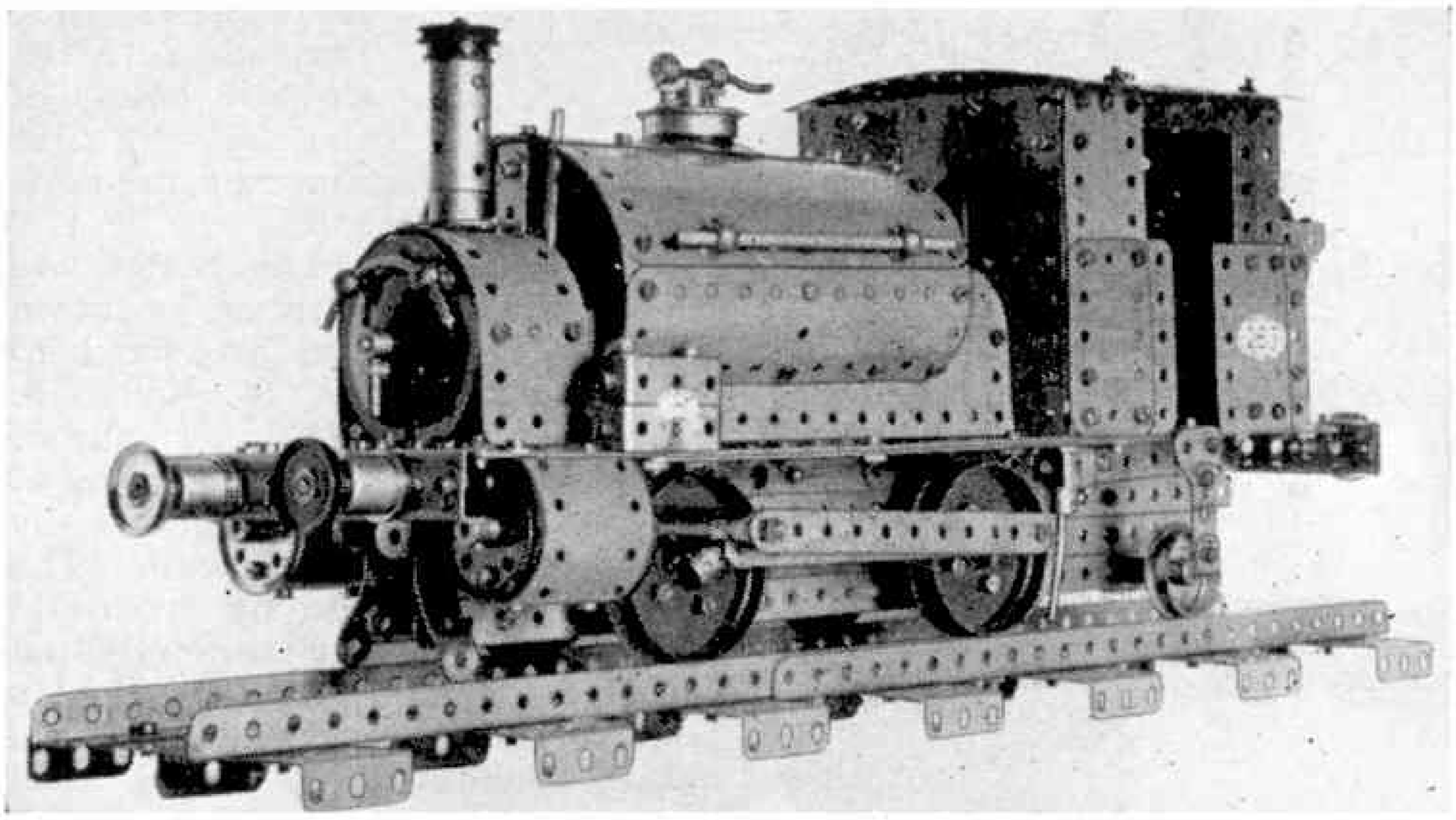


Fig. 4. The stationary superstructure and roof of the Carousel.



A fine model of a saddle tank locomotive that was in service on the Killin branch of the former Caledonian Railway. The model was built by P. R. Wickham Leicester.

Model-Building Competition

Prizes for Meccano Models of All Kinds

THIS month we announce another of the general model-building competitions in which we offer good cash prizes for the most original and best-built Meccano models of any kind sent to us. Every competitor, no matter what his or her age may be, has an equal chance in this Contest, and it does not matter what size of Outfit he or she possesses.

All that a reader has to do is to think of a new model and then to set to work to construct it as neatly and realistically as possible from standard Meccano parts. When he has completed his model, the next thing is to obtain either a photograph or a good sketch of it, and send this to us. The actual model must not be sent. If a photograph cannot be obtained, and an entrant is not good at sketching, he can ask a friend to make a sketch of the model for him, provided, of course, that the model itself is his own work.

The Competition is open to readers of all ages living in any part of the world, and will be divided into two Sections as follows: A, for competitors under 14 years of age; B, for competitors aged 14 years or over. A separate set of prizes, as announced in the accompanying panel on this page, will be awarded in each Section.

The judges will award the prizes for those models that are the most original in subject, well proportioned and built on correct mechanical principles.

A few notes may be helpful to competitors, especially those who have not entered Magazine contests before. Choose any subject you like for your model, but be careful to select one that you can reproduce realistically with the Outfit you possess. For instance, if you have only a small Outfit it would be difficult to make a really good model of a large crane. If, on the other hand, you select a truck or windmill, the probability is that you will be able to make a really good job of it. It will also help you on the way to success if you choose a model that "works".

Before posting your entry write your age, name and address on the back of each photograph or drawing. Address the envelope "Winter Model-Building Competition, Meccano Ltd., Binns Road, Liverpool 13". Closing date 31st May next.

It should be noted that all prizewinning entries become the property of Meccano Ltd. but unsuccessful entries will be returned if a stamped and addressed envelope of suitable size is sent with the entry for that purpose.

THE PRIZES

The following prizes will be awarded in each of the Sections A and B:

First Prize, cheque for	**£4**	**4**	**0**
Second Prize, cheque for	**£2**	**2**	**0**
Third Prize, cheque for .. .	**£1**	**1**	**0**
Five Prizes each of 10s. 6d.			
Five Prizes each of 5s. 0d.			

Certificates of Merit also will be awarded.

Club and Branch News

WITH THE SECRETARY

MERIT MEDALLIONS

This is the month when I publish the names of Club members who have been awarded the Merit Medallion during the past twelve months. I congratulate them on the good work for their Club and the Guild generally which earned them this official recognition, and which I know from their Leaders' reports was well deserved.

Here is the latest list: CAPE PENINSULA (SOUTH AFRICA) M.C.—Cohen C.; Venn, T. CHRISTCHURCH (NEW ZEALAND) M.C.—Davie, G. FREMANTLE AND DISTRICT (WESTERN AUSTRALIA) M.C.—Caesar, R.; Cameron, R.; Hopkins, K. JUVENTUS (EXETER) M.C.—Barnes, B. MAYLANDS (WESTERN AUSTRALIA) M.C.—Carter, L.; Chamberlain, A.; Down, T.; Gibbs, G.; Head, R.; Holliday, J.; Montagu, H.; Vidler, A. NORTH END (PORTSMOUTH) M.C.—Alderton, K.; Elkington, J.; Hillier (Miss) H.; Scutt, R.

CLUB NOTES

ASHTEAD FREE CHURCH M.C.—At a recent meeting members discussed what games could be built with Meccano, outlined the instructions and arranged for individual members to build the models for the next meeting. The models constructed were mostly of the fun-fair type, and included houpla, grab crane, dropping a ball into a cup at the end of a rotating arm, and picking up peas with "chopsticks"—Meccano 2½" Strips spaced on a 1" Rod and bound with a short rubber band—rather like a small coal tongs. All members had a go at each game in turn, scores being given at each stage, and the highest total score was the winner. *Secretary:* P. Dennis, 17 Cray Avenue, Ashtead, Surrey.

CONSETT Y.M.C.A. M.C.—Senior members meet on Tuesday and Thursday evenings, juniors on Monday and Wednesday evenings, and the model railway group on Fridays. Every other Saturday members visit the Durham swimming baths, and on the intervening Saturdays they go for a ramble over the moors or, if the weather is bad, have a model-building meeting. Each week Mr. Denis Snowdon, the Meccano Leader, organises model-building competitions for the junior members. *Secretary:* David F. Trout, 66, Sherburn Terrace, Consett, Co. Durham.

NORTH END (PORTSMOUTH) M.C.—Plans are in hand for building a Meccano model dockyard, including cranes, jetties, and cargo boats. It will be supplemented by the model destroyer R. Scutt is constructing. *Secretary:* Mr. A. J. Nicholson, 213, Sultan Road, Buckland, Portsmouth.

AUSTRALIA

MAYLANDS M.C.—A "Parents and Son" Social was well attended. Good models displayed included a printing machine, automatic ship coaler, streamlined locomotive and a level luffing crane. Models under construction include a merry-go-round operated through a penny-in-the-slot mechanism. *Secretary:* W. Bransby, 90 Crawford Road, Maylands, Western Australia.

FREMANTLE AND DISTRICT M.C.—An Exhibition held at the "Skyline" Drive-In Theatre was very successful, and a substantial amount was added to the Club funds. By the time this report appears in print the Club will have taken part in another Exhibition, this time at a local kindergarten. *Secretary:* M. Hughes, 6 Bolton Street, East Fremantle, Western Australia.

BRANCH NEWS

AVIARY MODEL RAILWAY CLUB (LEEDS).—The extensive alterations being carried out to the Branch layout will result in the high-level tracks crossing the low-level ones by a bridge, and will enable four trains to be run at the same time. While this work is in hand Track Nights are being devoted mainly to quiz programmes. *Secretary:* J. Baker, 10 Salisbury Terrace, Leeds 12.

NIGERIA

GINDIRI SECONDARY SCHOOL.—During the school Open Day the Branch and its associated Meccano Club put on a joint display in the school assembly hall. Operations on the Branch layout included such things as using lamps for appropriate trains and loading and unloading trains by means of cranes as if the loads were really heavy. Several new stations were built for the occasion, and an overhead bridge which was used by "passengers" at the main station. *Secretary:* Paul M. Thahal, Gindiri Secondary School, Sudan United Mission, P.O. Barakin Ladi, Via Jos, N. Nigeria.

Officials and members of the Ashtead Free Church M.C. photographed during a visit to Tilbury Docks. The s.s. "Britannia" is in the background.

HORNBY RAILWAY COMPANY

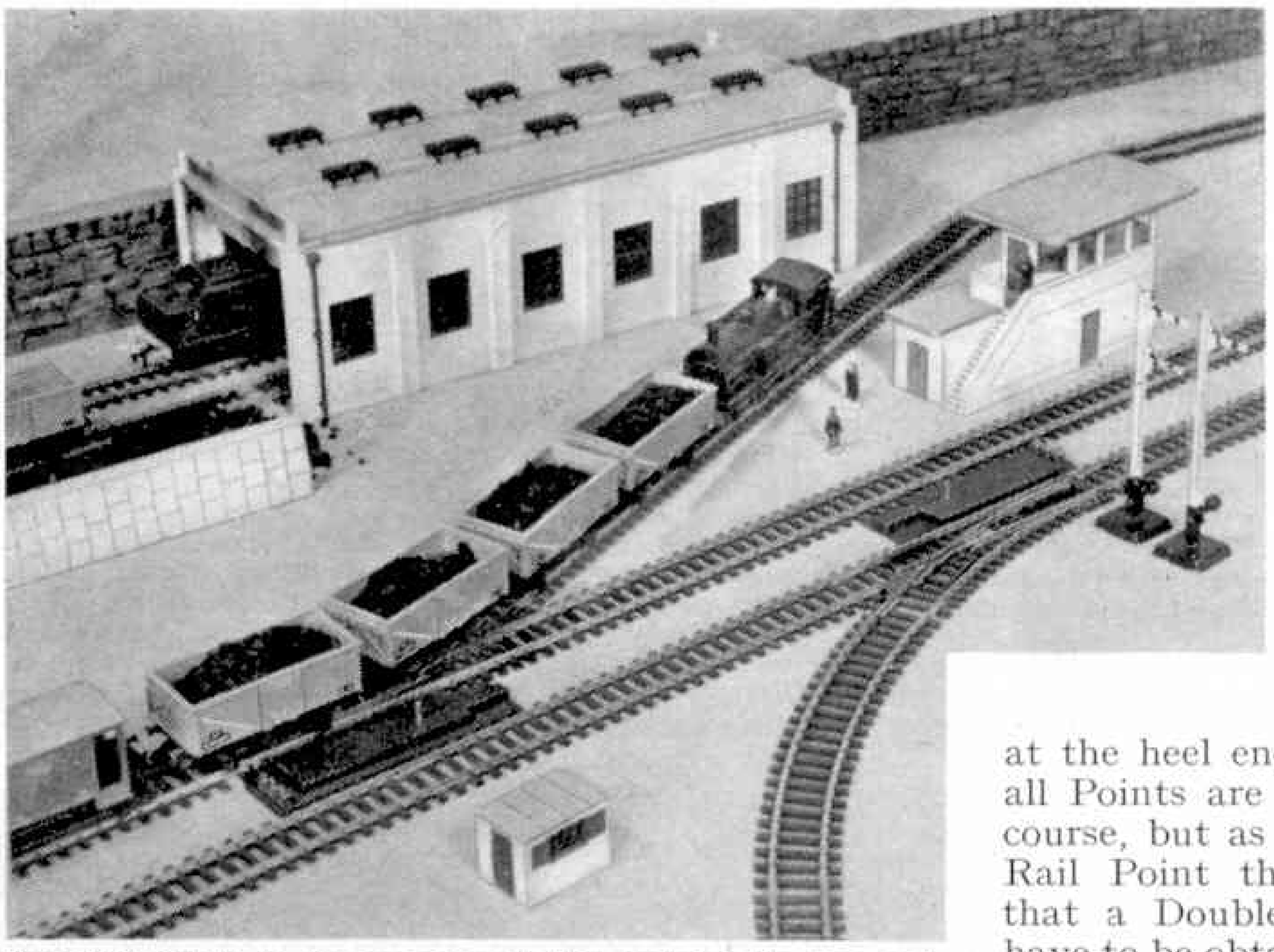
By the Secretary

More About Two-Rail Points

WE had a talk about Two-Rail Points last month, but there will be no harm in referring to them again, particularly as two of our illustrations here show Points in use. These are of the hand-operated kind, with which many of you will already be familiar.

Before we go into further details regarding the use of Points, I am sure that all of you will agree as to the effective manner in which the new Points "fit in". When they are laid in place the neat and consistent appearance of the sleepers incorporated in the track base ensures that the Points just "happen" in the permanent way, just as they seem to do in real practice. There is, of course, the switch box or casing on one side of the Points that accommodates the operating gear, but this is something that we have to accept and, anyway, real points often have operating motors and so on housed alongside them.

When speaking about Points in our previous talk, I drew your attention to the uses of the Double Isolating Rail in connection with them, but there still seems to be a certain amount of misunderstanding on this subject. Whether you need a Double Isolating Rail or not in conjunction with your Points depends entirely on the layout arrangement. Examples of various track situations are shown very clearly in diagram form in the instruction leaflet that is packed with the Points, but as many Hornby-Dublo owners like to weigh things up before they actually buy their Points, I may as well say a little more about this subject.

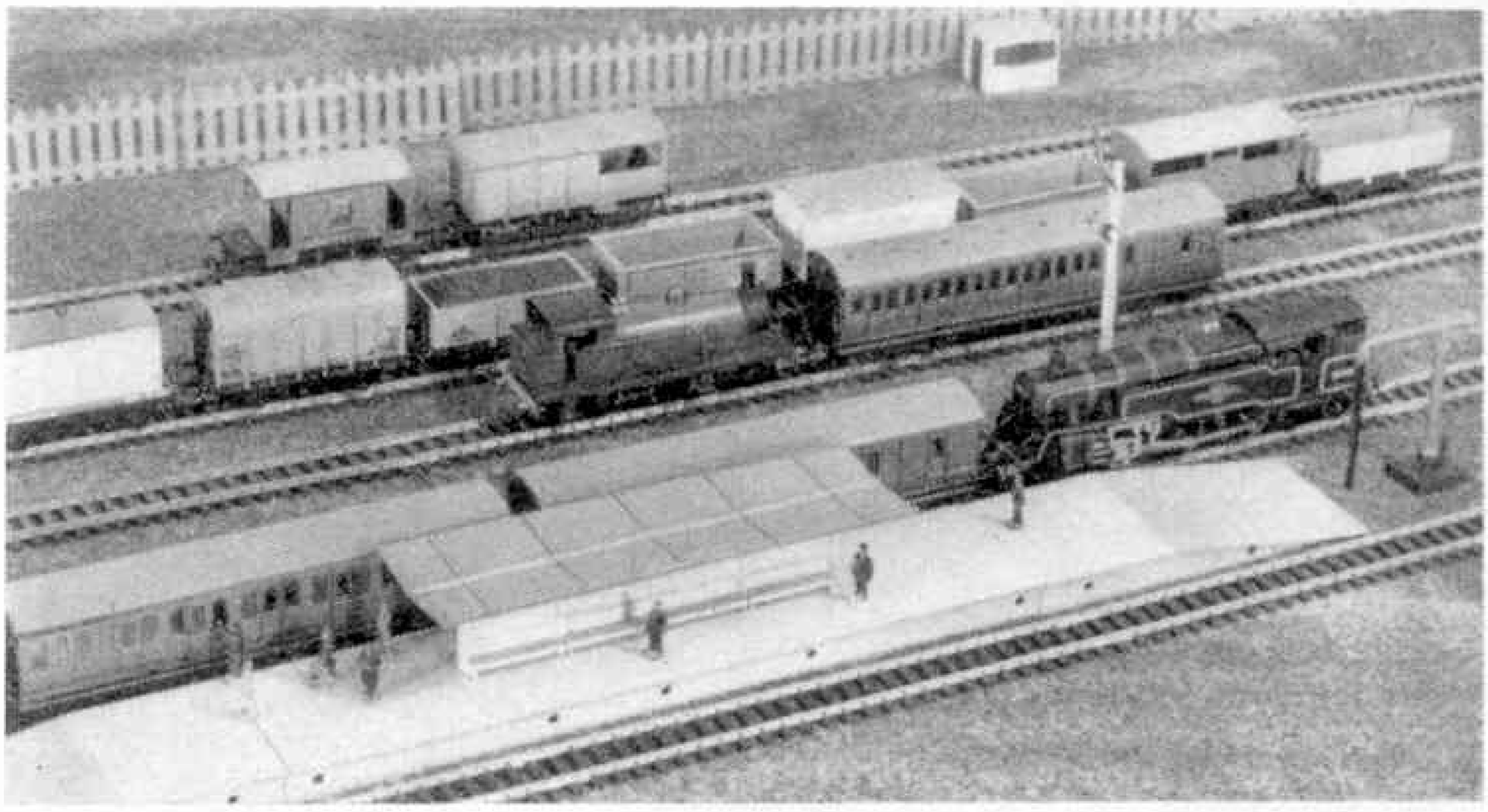


Two-Rail Points in use on a layout that includes the two-road Engine Shed assembled from the standard Hornby-Dublo Kit. The neat and consistent arrangement of the sleepers of the Points and other rail components is very striking.

If you have a continuous track, with a Point leading to a siding, then a Double Isolating Rail is essential in the main line circuit at the heel end of the Point. Not all Points are used in this way, of course, but as a rule the first Two-Rail Point that one buys means that a Double Isolating Rail will have to be obtained, too.

Not all Points in a layout involve the use of Double Isolating Rails as well, as will be realised from the two simple layouts shown on the back of the instructions booklet that accompanies each Hornby-Dublo Train Set or Locomotive. Where a Point in the main line leads to other Points serving a couple of dead-end sidings, terminated by buffer stops in the usual way, there is no need for either of these sidings to incorporate a Double Isolating Rail.

Where Points in the main line are used to form a loop, Double Isolating Rails will be needed, one in the main line section between the Points and the other in the loop line itself, where Hand-Operated Points are used. With Electrically-Operated Points, however, connected to be worked



A stopping train pauses at the Island Platform built up from the Hornby-Dublo Moulded Kit. The train is a short one and the coaches just fit the platform.

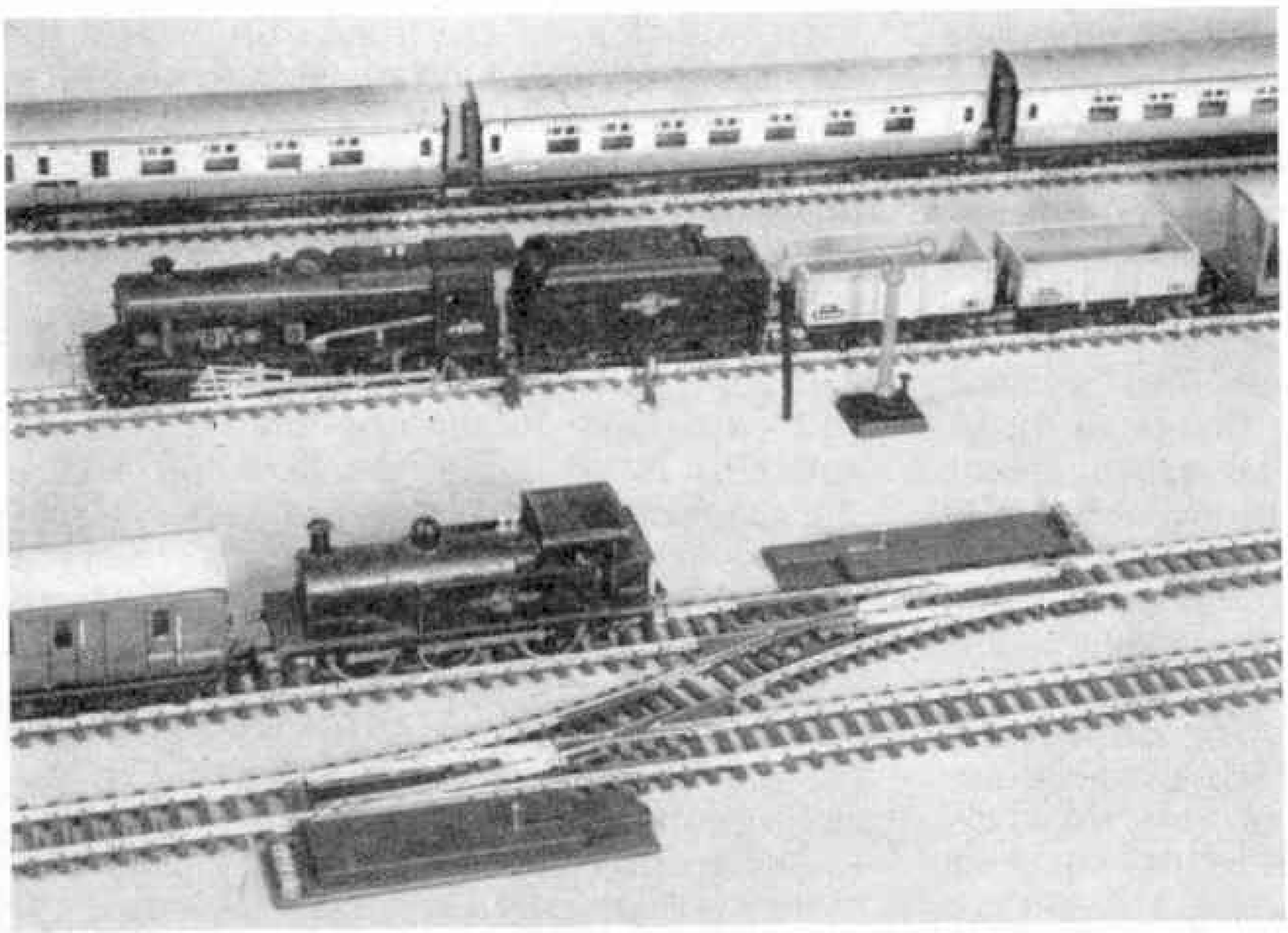
together from a single D1 Switch so that they both lead to the main line or the loop line as required, then the Double Isolating Rails need not be included. With the switch rails set for the main line the loop line will be dead, and vice-versa.

The Double Isolating Rail is so named because each of its running rails incorporates an insulating gap. Apart from this the rail looks just like the Straight Two-Thirds Rail, as it has no terminals or any other distinctive fittings at the lineside; they are not necessary. The Single Isolating Rail, which has to be connected to a D2 Switch, does, of course, incorporate two terminals at one side.

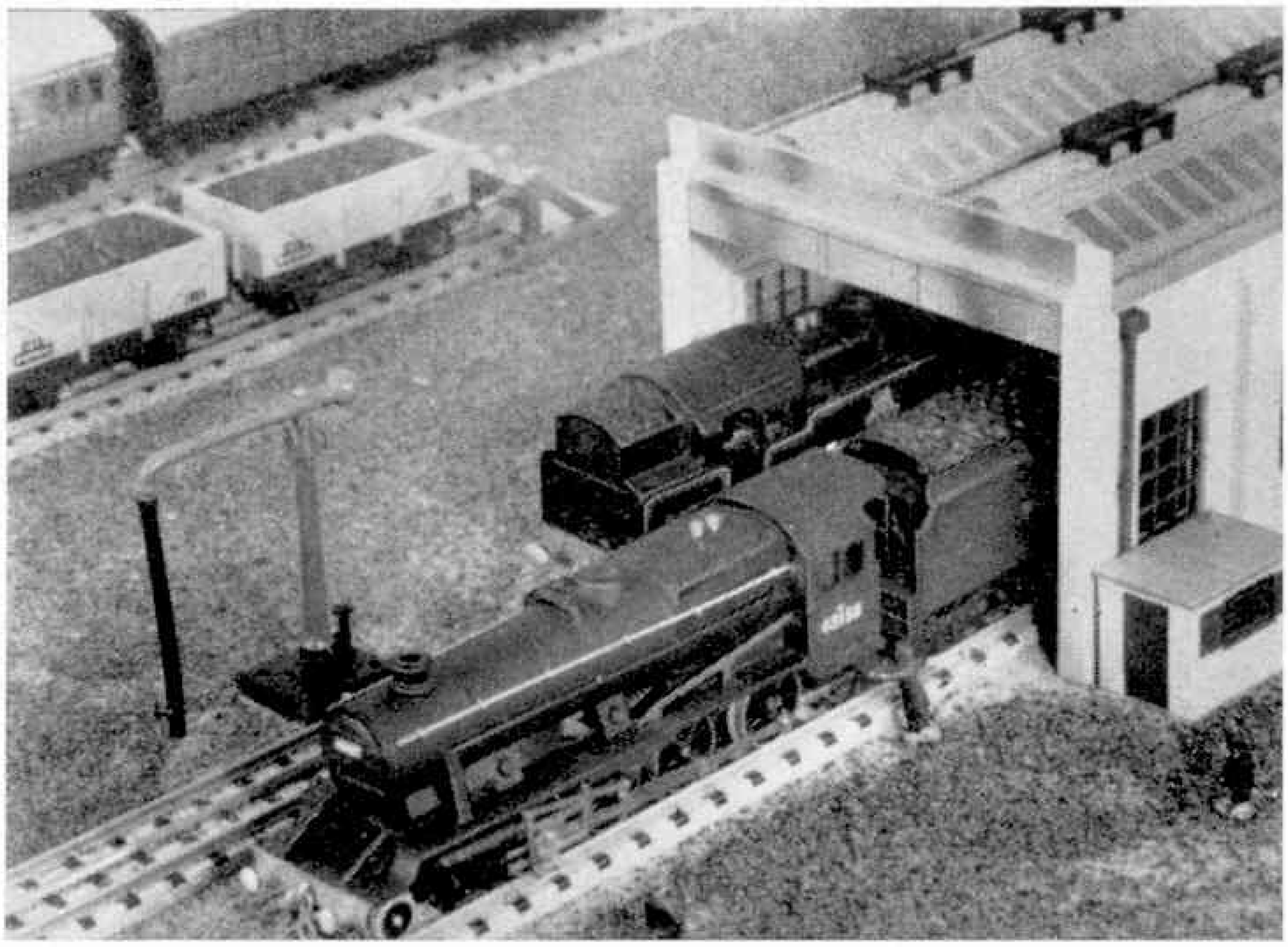
The standard Two-Rail Points in Hornby-Dublo are so designed that, as in the Three-Rail system, two Points together, of the same hand, can be used to form a crossover between two tracks at the standard distance apart. The bottom picture on this page shows this particular arrangement and the Points instruction leaflet incorporates a useful diagram which is important to all those who are thinking of incorporating a crossover scheme in their layout. Requirements regarding the feeding of the current supply to the track at the toe end of the Points, and with regard to the placing of a Double Isolating Rail as when you have a single set of Points in use, are made quite clear.

Operating arrangements where crossover points are in use require careful attention. When the Points are changed to allow a train to cross from one track to the other, the controller or power unit that is to receive the train should be set for the same direction and speed of travel as the one already in use. The train will then pass automatically from the influence of the first controller to the second. When the crossing over movement is completed the switch rails of the Points should be restored to the normal setting, that is for main line running.

If it is necessary to carry out a series of shunting movements through crossover Points, the switch rails can remain set for crossing over during the operations. In that case control of the train can be effected from either control unit.



Hornby-Dublo Two-Rail Points arranged to form a crossover between up and down tracks. This picture shows the arrangement of the switch box, operating handle and the terminals on the Points.



Hornby-Dublo Locomotives at home in the Two-Road Engine Shed. The Water Crane is an essential feature of any shed scene.

"Shed Visit" in Hornby-Dublo

By "The Engineer"

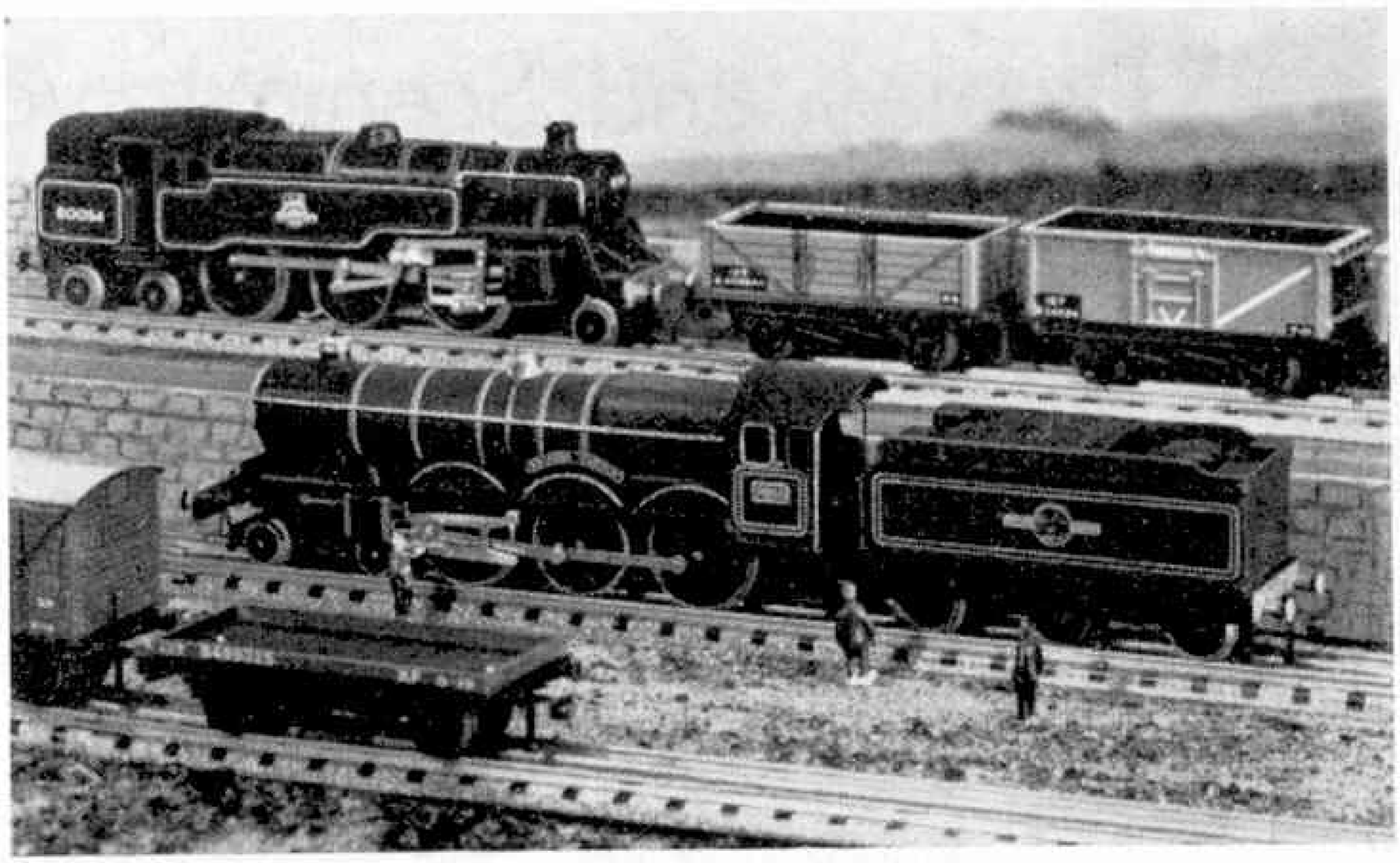
IN recent issues of the *M.M.* I have been glad to draw your attention to the new Moulded Kits that are proving such a popular feature among the Hornby-Dublo introductions of the present season. In particular, the Engine Shed that can be assembled in two-road form, as shown above, and the four-road shed that results from the addition of the Extension Kit, have been dealt with in some detail. But this has been done more from the point of view of assembly than anything else, and now the time has come to consider how to use these engine sheds, and indeed to see how the "Locomotive Department" should be set up on a Hornby-Dublo Railway.

The Engine Shed can be used equally well on Two-Rail and Three-Rail layouts. Actually the illustration on this page shows it on Three-Rail track, but the arrangement could just as easily have been carried out in Two-Rail.

On Three-Rail layouts, most Engine Sheds will be served by a Turntable and it is quite possible that on some layouts the shed will be erected over two or more of the offgoing tracks from this, where these are brought to run parallel to one another. Alternatively, the engine roads such as those shown in the illustration above may be connected by Points in a similar manner to loop lines and other double track arrangements, the two tracks being then at the standard distance apart. Where a Turntable is not used, there may be other means of turning locomotives round when necessary, such as a reverse-curve loop of the type well known to all Hornby-Dublo layout planners.

In addition to the roads on which the engines themselves stand, you should have one or two other tracks for the accommodation of the wagons that are supposed to bring "loco coal" to the depot, or those that take the ashes, etc., away. You may, perhaps, have some form of dummy coaling arrangement to serve your engines. This will depend a good deal on your own ideas and capability in making such things or, and this is probably the deciding factor, the amount of space that you have to play with. Naturally you will require at least one Water Crane by your Engine Shed, its position depending a good deal on the layout arrangements, and more can often be added correctly. A row of several of these Cranes, one to each of several tracks, looks really effective.

The arrangements so far mentioned apply more particularly to steam sheds, but if you



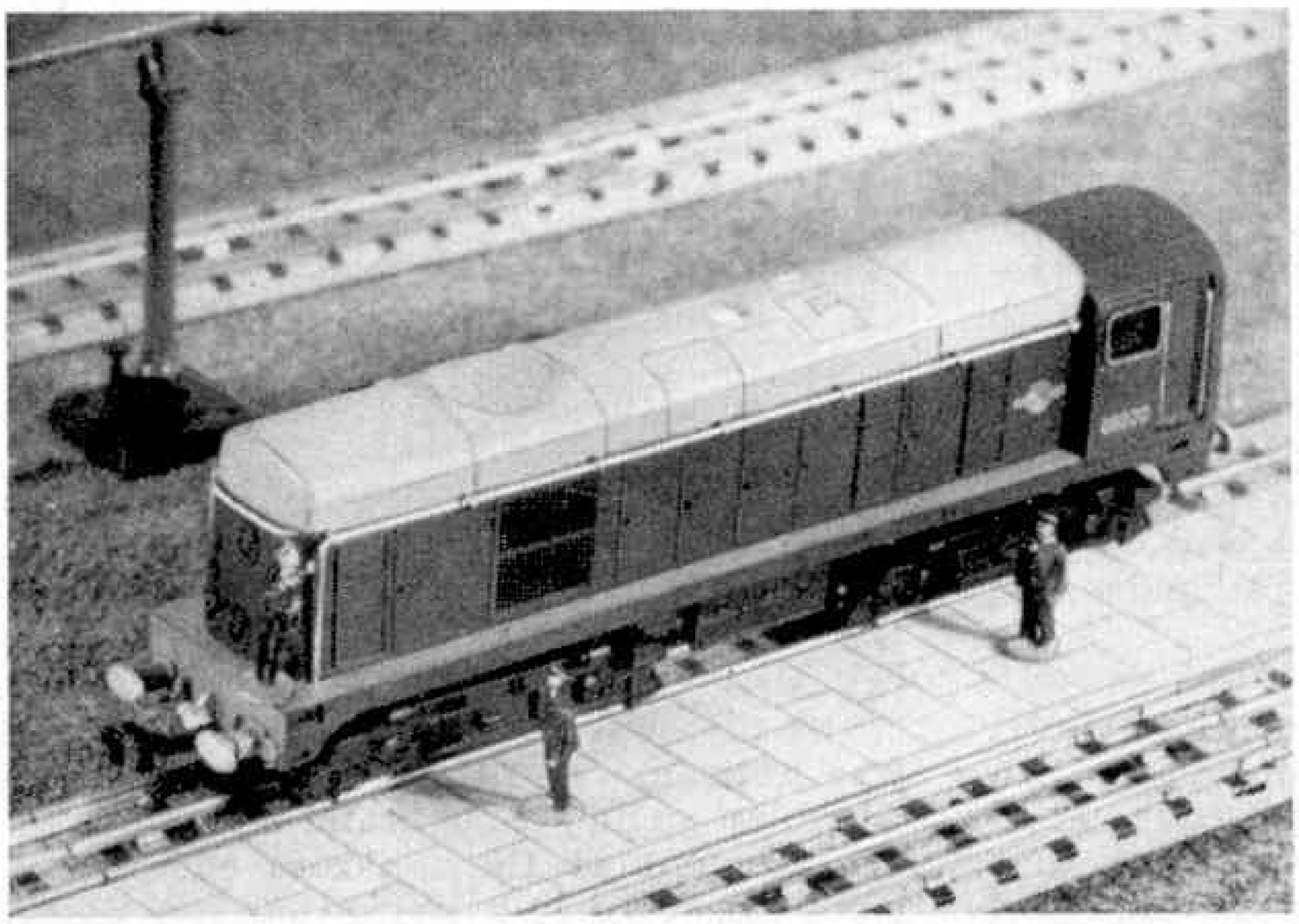
On the raised track the 2-6-4 Tank removes empty coal wagons, while in front of it "Bristol Castle" receives attention before going on duty.

have one of the Hornby-Dublo Diesels among your motive power, you may need to accommodate this together with your steam type engines in the steam shed. If you have the space, and more than one Diesel in use, you may very well consider the provision of a separate depot for them, which would be in line with current practice. In that case you won't need any coal wagons standing by, but you should endeavour to arrange something for the "pretend" fuelling of your Diesel. The newly-introduced Esso Fuel Oil Tank Wagon is just the thing for this. The fuelling plant at some diesel depots is quite elaborate, but in miniature, where space restrictions are usually severe, it may not be possible to do much more than have a siding for fuel oil tank wagons and a building representing the pump house. This would be a simple set-up and one that could be found in actual practice, the standing tank wagons operating as storage tanks and being replaced when empty.

The Hornby-Dublo Goods Depot, now appearing in moulded kit form, is something that every growing Hornby-Dublo Railway must have. You will have seen the advertisement in last month's *M.M.* featuring it, and I am sure that its general appearance must have attracted you. It is very quickly put together from the items in the Kit, for assembly is quite straightforward, providing that the very simple and clear instructions are followed. *But just note that it is important to follow the order of the instructions.*

Here again I must mention that screws fitting into various brass inserts in the Kit may seem tight at first. Do not attempt to ease them, except by inserting the screws into the tapped holes alone before erection is carried out. This will help to open out the brass inserts and make assembly easier.

The general style of the depot follows current Hornby-Dublo practice, representing a platform and building of modern concrete construction. Its platform is just the right height for the Hornby-Dublo Wagons that will come alongside, and the needs of the staff have not been forgotten, for at one end of the platform a flight of steps is let in so that the deck and the building can be reached.



Shed staff attend to the Hornby-Dublo Diesel-Electric Locomotive. The use of Pavement Sections between the rails adds a neat touch to the scene.

Display and Scenic Layouts

By "Layout Man"

FOLLOWING the reference in the *M.M.* "Junior Section" last month, I am now able to tell you something more about the interesting layouts that have been arranged on the occasion of the annual children's party organised by the Wembley Research Laboratories of the General Electric Company Ltd. At this party a Hornby-Dublo layout is a regular feature nowadays and it is one of the chief attractions of this important function. Valuable experience was gained on the first occasion in 1957, so that when the layout of which part is shown above was being prepared for 1958 an early start was made in the design work.

If any of you have to arrange anything similar for display purposes at home, or at school or, perhaps, for some local function, you will find it a good scheme to follow the same course. Planning well in advance, and if possible trying out various track formations, will enable you to iron out any of the little problems in arrangements or in operation that are likely to crop up. The great thing to remember with any display layout, large or small, is to keep traffic moving. Otherwise your onlookers will get somewhat bored. So even if your layout is a large one, as in this instance, the general plan should be simple and allow for easy working.

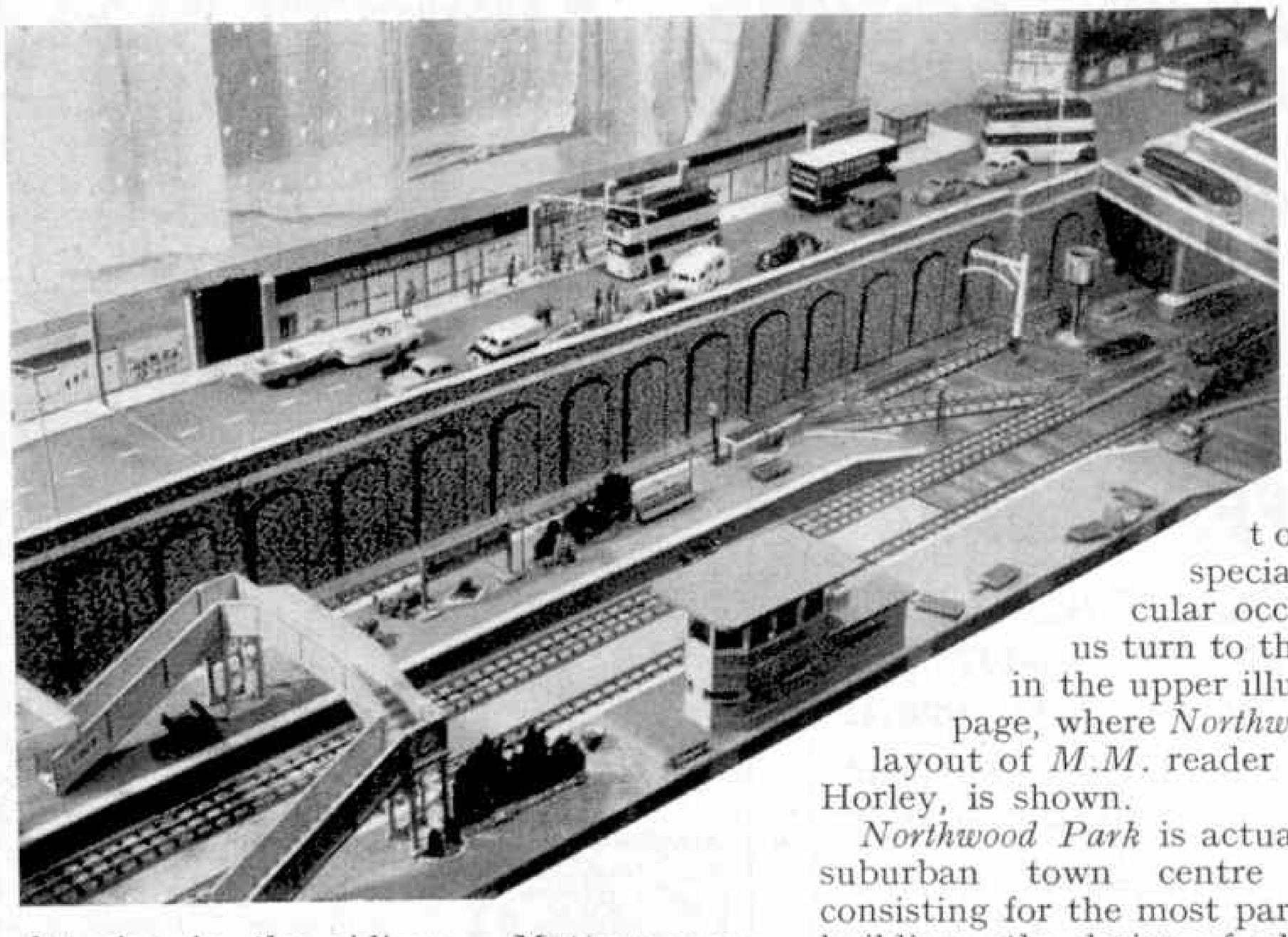
In these G.E.C. affairs as much activity as possible on the line is aimed at, several operators being on duty at one time, with relief men at hand to take over when necessary. Such "shift work" means that it is important to have a straightforward working scheme so that there is no hitch when the relieving members take over.

From the working point of view the layout shown on this page was probably one of the most successful. Continuous running was afforded on a double track main line requiring a total space of 16 ft. by 7 ft. The usual oval-shaped formation was modified by having one of the longer sides of the formation set in by means of reverse curves in order to provide space for the control equipment and the operators.

Interested spectators keenly watch the running of the Hornby-Dublo trains on a layout arranged specially in connection with a G.E.C. Christmas party.

One of the latter appears in the right-hand lower corner of our illustration and you can see that in front of him the double track main line spreads out to provide platform loops at the station, which you can just distinguish beyond the operator's right shoulder.

The station as a whole consisted of three Island Platforms, the innermost one being served by a further loop developed through the Points connection that you can see just above the Junction Signal in the lower centre of our picture. One end of this loop was extended to provide a short section where an engine could stand and a further development at the opposite end of the layout resulted in a track that functioned as a reception road and spur that was of great value when making up or disposing



"Northwood Park" on the Hornby-Dublo layout of R. G. Miller, Horley. Two Island Platforms are used effectively, the town that they serve being above the level of the railway.

of trains in the sidings. Matters were completed from the track point of view by a Turntable.

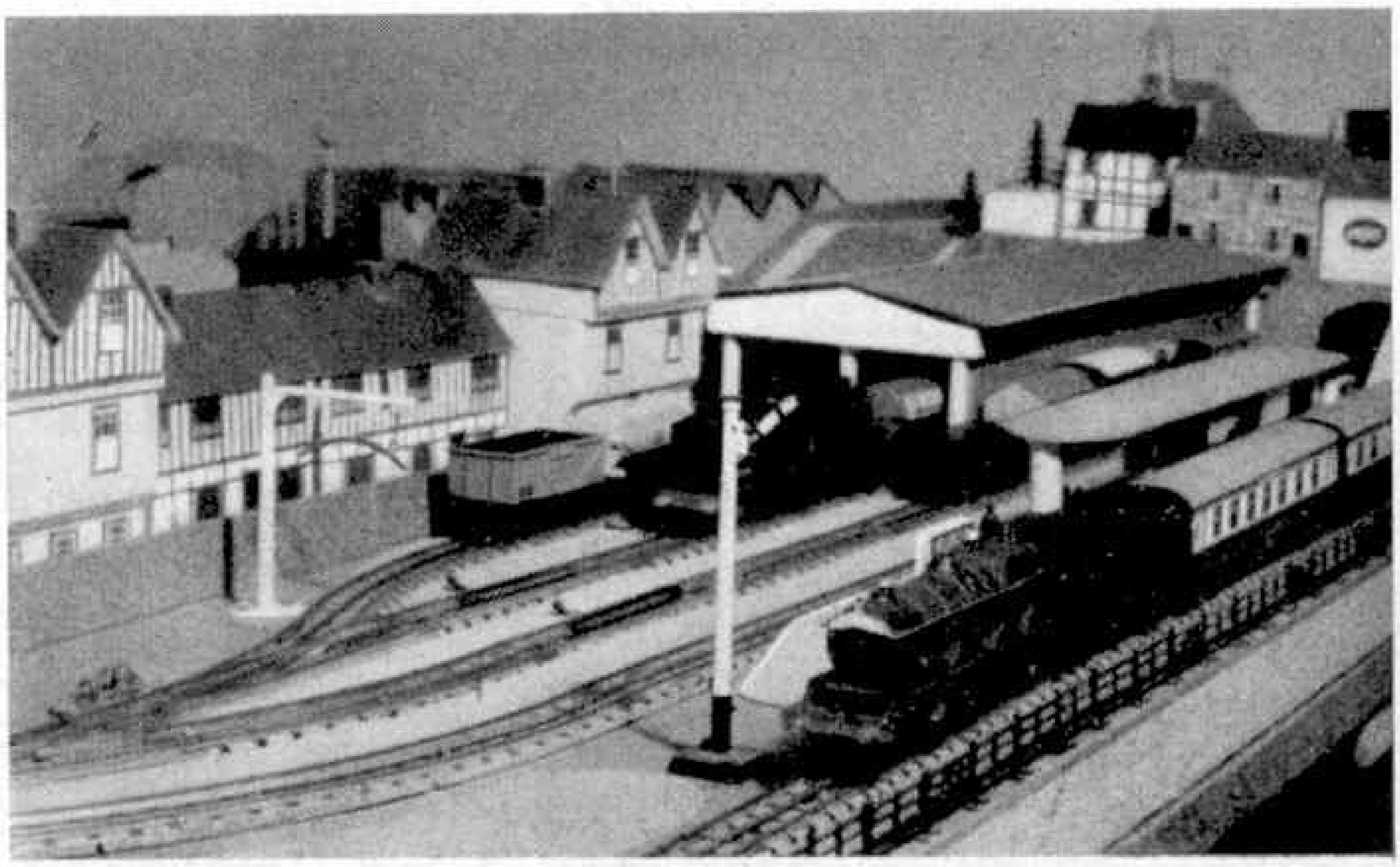
Remarkably enough, most of the Points on this occasion were hand operated, which the control staff found a little irksome, except those members who had long arms! There is little doubt that for display purposes Electrically-Operated Points are of great advantage.

Wisely, certain features of scenic interest were provided at the lineside, to vary the scene as well as the running. At two opposite corners of the layout fairly big tunnels were arranged. Tunnels can be very effective in such positions as they tend to mask the fact that the railway, somewhat abruptly, turns through a complete right angle.

Now the various scenic items and buildings of the G.E.C. Research Laboratories party layout were all arranged at baseboard level, as is more or less inevitable on a system having to be set up specially for a particular occasion. Now let us turn to the system shown in the upper illustration on this page, where *Northwood Park* on the layout of *M.M.* reader R. G. Miller, of Horley, is shown.

Northwood Park is actually a district or suburban town centre in miniature, consisting for the most part of home-made buildings, the design of which is based on various real ones known to the owner of the layout. Following a practice that is popular nowadays among Hornby-Dublo owners, and one that can be very effective, the town is for the most part above rail level, so that the overbridge crossing the railway at the right-hand end of our picture leads straight into the "High Street" in a most convincing manner. All the usual kinds of stores that one expects in a town centre are represented.

A layout that effectively combines baseboard and raised level scenic features is that shown below. This is operated by Mr. G. A. Rogers, of Bilborough, and his son, and readers will find details of it in the *M.M.* for October last.



"Bristol Castle" comes to rest at "Wellington" on the layout of Mr. G. A. Rogers, Bilbrook, where lineside effects are arranged on two levels.

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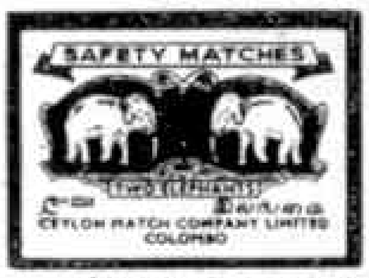

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For other stamp Advertisements see also pages 106, xviii and xix

Stamp Collectors' Corner

By F. E. Metcalfe

LONELY ISLES

Along with the publication of the February *M.M*, a fishy set of stamps for lonely and far-away Tristan da Cunha will appear. As this issue will be very popular with collectors who go in for British Commonwealth stamps, as well as with those forming a thematic collection, I think this is a good moment to run through Tristan's philatelic history in general.

Now I am not going to unload a lot of history on you. So I will just state briefly that Tristan da Cunha is the largest of three islands in the South Atlantic, the other two being Nightingale and Inaccessible, and to them Gough Island, although 300 miles to the south south east, is attached politically. Those mighty seamen and navigators, the Portuguese, discovered the group in 1506, which accounts for the name, and Britain stepped in during 1817.

The islands have a close connection with St. Helena, for when Napoleon died in that island most of the garrison moved over to Tristan, where their descendants are in the majority to this day. The total area is only about 40 square miles, and the inhabitants have gone through some very lean periods in the past. Things are a great deal better for them these days, for they have two quite profitable exports in crawfish, eagerly bought by America and France, and stamps, which also are eagerly bought, by collectors who know when they are on a good thing, as Tristan stamps have proved to be.

The stamps are printed in Britain. With great enterprise the Tristanians made some into stamp booklets, with blue covers, and when a cruising ship called these were snapped up. There were only 500 to begin with, so they are now worth several pounds each. But take care! More booklets were made, this time with red covers, that are only worth about a pound each. Now booklets have been made from the new current stamps, and these are only worth a little over face value, which is 3/6.

I have mentioned already the Tristan stamps have all proved quite good. Actually there have not been many of them, and it was only as recently as 1st January 1952 that the first stamps were issued. These were the current stamps of St. Helena from ½d. to 10/–, overprinted TRISTAN DA CUNHA in two lines.

They only remained on sale for a couple of years, and when they were replaced by a new pictorial designed specifically for Tristan, nobody bothered very much to stock up. Now it is being discovered that this overprinted set is quite scarce, and you will not get a set today at very much under double face. If you can you are very lucky and the opportunity should not be missed.

There was the single "QEII" Coronation stamp in June 1953, which needs no description. The 1954 issue, which has now been replaced, apart from depicting the ubiquitious crawfish on the ½d. value, showed island scenes that give you a good idea of its appearance and of the mode of life on Tristan. For instance, on the 1/– you see St. Mary's Church, and on the 6d. and 9d. values are views of Inaccessible and Nightingale Islands. Local species of birds figure on the 1½d., 2½d. and 5/– values, etc.

But the stamp that shows the most important item from the islanders' point of view is the 2d. value. This illustrates the factory where those famed crawfish are canned. Spinning flax is an island occupation, too, and a spinning wheel is shown on the 10/– value, while on the 1d. stamp an ox cart is depicted moving flax for thatching.

Yes, the 1954 issue is of great interest, and as it has been running for five years, it may not prove as scarce as the original overprinted set. Yet it is well worth buying now, for some of the values at least will be short. For instance, the 1½d. has been off sale for months, and if you buy a set, even a short set to a shilling, make sure that it contains this 1½d. stamp. All the stamps in the set had interesting designs, so even if you can only afford to buy a set to 3d. or 6d., if you can find them with the 1½d. value included, you will get stamps well worth mounting and writing up.

And now we come to the new "fishy" set issued today, the publication date of the February *M.M.* There are fourteen values from ½d. to 10/–, and even if you only want to buy a short set, every stamp you get will provide a nice picture. All subjects are to do with the sea, most depicting fishes that are to be found in Tristan waters. All shapes and sizes appear, and—would you believe it?—the 2/6 value is our old friend the snoek! Here it is given its Sunday name *Thyristes Atun*.

In a bulletin issued by the Crown Agents, who distribute the stamps to dealers in America and Britain, are some very interesting data about the subjects depicted, supplied by the one-time administrator, Mr. G. F. Harris. One comment that rather amused me, states that it is not possible to do justice to the giant of the seas, the whale, on something as small as a postage stamp. When you see this stamp, just note, by placing the whale on a vertical design, what a poor effort was made to use the space available. Another fish well known to us in name is the Tristan mackerel on the 6d. It is supposed to be much larger than the British mackerel.

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For other stamp Advertisements see also pages 104, xviii and xix

Stamp Gossip

MONEY IN STAMPS

There are often arguments as to how much cash our own Post Office is throwing away by its conservative attitude towards the issue of special stamps. All kinds of figures have been suggested, mostly guesses, of course, but perhaps the best way to get somewhere near the truth is to see that foreign postal administrations make by way of selling stamps to collectors.

Take for instance the Philatelic Bureau of the U.S.A. in Washington. In 1921 the Bureau started an agency to serve collectors, and up to July 1959 sold stamps to the face value of $53,556,127, or nearly £12 million. Surely such a sum would have done our Post Office a bit of good. Sales last year were $2,933,989, or over £651,000. No wonder that Mr. MacMillan, when he was told of this while paying a visit last year to Washington, wanted to know why we did not set up a bureau.

A Prime Minister has to delegate some posts to others, and if you happen to get someone who thinks, and says, that stamps are "only for paying postage with", well, there is little chance of those collectors' millions coming the way of our own Post Office, until there is some change in heart. And, of course, it is no use setting up shop if you have no goods to sell. Before we could rake in the money, attractive stamps would have to be printed. I suppose we shall see the light one day.

BRITISH LOCALS

Not very long ago, a collector sent me two stamps, of which one had come from Lundy and the other from Herm Island. They were part of two sets he had received from a friend, and he was anxious to know their real status. I was able to tell him, and as these unofficial "locals" are becoming quite popular perhaps other *M.M.* readers will be interested in what I wrote to him.

Lundy Island is in the Bristol Channel, off the North Devon coast, and Herm is one of the Channel Islands. Both enjoy visitors, who themselves enjoy sending postcards from them. There is no official Post Office on either island, and it is services provided by the owners of the islands that enable them to do this. The owners naturally want to be paid for carrying our mail to the mainland, so they have provided local stamps to be affixed to cards and letters, as well as ordinary official postage stamps. This mail, properly franked, is taken to the mainland, and posted from there.

Incidentally, the British Post Office will not allow the local stamps sold by the owners of the islands to be affixed on the *front* of a piece of mail.

Both islands have issued quite a number of stamps, and such is their vogue, particularly in the U.S.A., that some of them bring quite good prices. I saw a selection bought for more than £30 recently by an American collector. You can if you wish make a bit of a showing in your album, however, for the expenditure of only a few shillings. Locals add interest to a British collection, and that is why they are becoming popular.

BOOKLETS

Recently I received a letter from a new collector who had been surprised to find that stamp booklets were included in a catalogue he had bought. He asked if such a stamp sideline was popular, and how he could go about collecting them, apart from those he could buy in the local Post Office, for his dealer does not handle booklets.

Not all stamp dealers do sell booklets, but they can always tell you of a dealer who does. In the United Kingdom they are not as popular as they are in, say, the U.S.A. But interest is increasing, and while all British booklets now on sale have stamps with the Crown watermark, many of the "QE" booklets have mixed watermarks (those with the Tudor Crown, St. Edward's Crown and, with QEII, Crown only) and it is great fun looking for the combinations. Moreover, those booklets can be picked up at very little over the face value of the stamps they contain, but if the collecting trend continues some may increase a bit in value when their relative scarcity has been realized.

British booklets seem to be changing all the time, and any you buy now may become obsolete later on, and if they don't, what's the odds? You can always use the stamps they contain for postage, without losing anything, which is more than you can say about some forms of stamp collecting.

N.Z. HIGH VALUES

Another collector has asked me why New Zealand stamps are catalogued only up to £5 face value, although £10 stamps are frequently used for postage in these days of airmail. The New Zealand Post Office, it seems, looks upon the high value stamps as primarily for fiscal use, though they can also be used for postage. Such a limitation is no longer valid, and no doubt in time £10 stamps at any rate will be given catalogue recognition.

TIP OF THE MONTH

Definitive N.Z. stamps, normal everyday stamps bearing the Queen's portrait, were first issued in 1953, with what are known as the small value figures. As these figures were not easy to see, stamps with the same design later appeared with the figures enlarged. Later on there was yet another change, this time to a thicker white paper, which is used now for up to the 8d. value and the 1/9.

Now this is the catch about the set. The 3d. value, with the large value figure, never appeared in sheet form on the original thin paper. It only appeared thus in booklets, with the result that many collectors missed it.

So what you have to look out for, is a set from 1d.—the ½d. never appeared with the large figures at all—to the 8d., including of course the 3d., on the original thin paper. The set will never cost the earth, but as time goes on, a complete set will take a lot of finding.

How Railways Fight Snow—(*Continued from page 58*)

another was blocked, for now even though it was not snowing, the 60 m.p.h. gusts of freezing gales, sweeping over many square miles of upland lifted up the snow and carried it down on to the railway.

This great battle between man and nature, which is illustrated *on a good day* by our cover, continued into March. Hundreds more railwaymen gave up their rest days to join forces; the Government gave top-line priority to the matter; and even naval personnel were pressed into service with searchlights, mounted on flat wagons, that enabled snow clearing to be continued right through the nights. The Royal Air Force too had a hand in matters, a powerful jet engine being brought into the battle. This was mounted on a truck, and with the outlet end facing snowdrifts was slowly propelled by a locomotive. At last the warmer sun and winds came to aid the tired and toiling men, and by the end of March normal traffic was resumed.

Many a tale of the bitter fight with the snow demon is still told where men who took part gather. One railway man told how a small working party, repairing damaged communications, was caught in a storm so severe that men had to crawl back to shelter on hands and knees, each with a sack thrown over his head, two holes being cut in for sight, as protection from the cutting, driving ice particles.

Another told of a locomotive fitted with a heavy plough charging a big drift at over 60 m.p.h. The drift won. The engine was thrown off the lines, hurling it clean over a wall and into a field, the plough tearing up a 60-foot rail on the way.

Fortunately blizzards of such intensity and duration as that of 1947 are rare in Great Britain. In fact this one was the worst ever experienced since the opening of the main line between Settle and Carlisle in 1875.

Road and Track—(*Continued from page 63*)

where 66-year-old Charles Cooper and his 36-year-old son John build their world beaters. Charles, as a youngster, was apprenticed at Napiers from 1910 to 1912, served in Transport throughout the First World War and opened a garage at Norbiton, Surrey, after the war.

One of his neighbours was Kaye Don, and after a period of racing motor-cycles at the famous Brooklands track, Charles Cooper was persuaded by Don to forsake racing for tuning. Not a great deal of persuasion was needed, for Charles preferred the tuning side, and after working on Kaye Don's racing motor-cycles he then tuned such famous cars as Don's big 4·9 litre Bugatti, his Wolseley Viper and the M.G. Magnettes. He also prepared the famous "Silver Bullet".

It was at Brooklands that twelve-year-old John Cooper lapped the Weybridge track at 80 m.p.h. in a two-seater Austin Seven. John was already a driver of some experience, and the proud owner of a modified tradesmen's box motor-cycle that had been given to him by his father.

With this background of speed it would have been disastrous to Great Britain if Charles Cooper had carried out a proposed scheme just before the Second World War, when he planned to manufacture caravans! Fortunately the war interfered with the project and in 1945, when Charles and John heard about the plans of the Bristol Aeroplane Company Motor Sporting Club for 500 c.c. racing, caravans were abandoned.

And so it came about that the Coopers became racing car manufacturers. They drove too in those early days and the post-war Formula 3 entry lists at Goodwood and Brands Hatch include the name of Charles Cooper, while John won two major 500 c.c. races in Germany, one in 1952 and the other, the Avus G.P., in 1953, as well as having many other continental successes in Formula 3 racing.

Today, the well-liked Coopers no longer race, but direct the motor-racing activities of men like Brabham and McLaren.

Easy Model-Building—(*Continued from page 81*)

is completed by bolting in place a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate, which is attached by bolts 21 and 22 to the upper right-hand lugs of the Motor. The head is a Wheel Disc fixed by an Angle Bracket to two $\frac{1}{2}'' \times \frac{1}{2}''$ Reversed Angle Brackets.

The driving pulley of the Motor is linked by a $2\frac{1}{2}''$ light Driving Band to the 1" Pulley 12.

When the Motor is set in motion the boxer proceeds to punch the Sack furiously. The hand and forearms of the boxer may have to be bent slightly inwards as shown in order to get the best effect.

The Boxer can be built with the following parts:— 2 of No. 2; 9 of No. 5; 5 of No. 10; 1 of No. 11; 6 of No. 12; 1 of No. 17; 2 of No. 22; 1 of No. 24; 1 of No. 24a; 47 of No. 37a; 38 of No. 37b; 8 of No. 38; 1 of No. 48a; 1 of No. 52; 2 of No. 90a; 2 of No. 111c; 1 of No. 122; 2 of No. 125; 2 of No. 126; 1 of No. 126a; 1 of No. 186; 1 of No. 189; 1 *Magic* Motor. (Part No. 122 is not included in Outfit.)

Parts required to build the Woodturner's Lathe:— 7 of No. 2; 2 of No. 6a; 1 of No. 10; 2 of No. 11; 6 of No. 12; 2 of No. 12a; 1 of No. 16a; 1 of No. 16b; 1 of No. 18a; 3 of No. 22; 1 of No. 23a; 1 of No. 24; 35 of No. 37a; 35 of No. 37b; 2 of No. 38; 1 of No. 40; 1 of No. 44; 1 of No. 45; 1 of No. 52; 2 of No. 59; 4 of No. 90a; 1 of No. 125; 1 of No. 155; 1 of No. 186a; 1 *Magic* Clockwork Motor.

Among the Model-Builders—(*Continued from page 93*)

firm's Research Laboratories, where it forms part of an apparatus for studying the mechanisation of a manufacturing process. The only non-Meccano part used in the construction of the conveyor is the belt itself, which is made of calico. The conveyor has an overall length of 7 ft. $3\frac{1}{2}$ in., and Boilers (Part No. 162), are used as the rollers. Dr. Mitchell tells us that he was a "Meccano boy" in his youth and now that he has a young son, he has resumed his interest in the hobby quite apart from laboratory applications.

"AIRCRAFT ANNUAL 1960"

Edited by JOHN W. R. TAYLOR

(Ian Allan, price 10/6)

The current edition of this popular Annual begins with the customary review of the past year's activities in the air and with a glimpse into the future. The following articles cover, as usual, many aspects of aviation, and range from a thrilling account of the first thousand-bomber raid on Germany by the man who was responsible for its launching to facts about the jet-age. Between these extremes are interesting chapters on, among other things, the model airport at Maduradam, the miniature city near The Hague in Holland; British pilotless aircraft; vertical take-off and landing; and a survey of satellites and of the progress being made toward putting the first man into space. The Annual is lavishly illustrated, now in both colour and half-tone.

RARE STAMP PICTURE CARDS

We have received an interesting set of picture cards illustrating some of the world's rare stamps, the second issue by Twining Crossfield & Co. Ltd., who insert them in their cartons of tea. On the back of each card are some details of the stamps themselves, and each card in the series of 30 carries also a coupon. Anyone collecting a full set of 30 of the cards can obtain a free packet of selected foreign stamps in exchange for the 30 coupons.

The stamps in the series are shown in colour, beginning with the 1847 Penny Red, which has one of the identification letters missing, number 30 showing a British Shilling Government Parcel stamp, the overprint of which is inverted.

CORRECTION

The photograph of a reconstructed Moa reproduced on page 34 of last month's *M.M.* should have been acknowledged to the British Museum (Natural History), London, and not to the Science Museum.

An unusual station notice. Photograph by C. G. Maggs, Bath.

Tickets "Up the Road"

Dilton Marsh, a halt on the Southern Region between Westbury and Salisbury, is unusual in that the up and down platforms are not opposite each other. This is not unique. Many country stations on the former North Eastern Railway are of that type, for instance, but in other parts of the country it is a rarer feature on British Railways.

At the entrances to the platforms at Dilton Marsh, notices inform passengers that they may buy their tickets at a private house and give directions to find it. Similarly at Appleford Halt, on the Western Region between Didcot and Oxford, passengers go to the post office for their tickets.

C. G. MAGGS
(Bath)

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

Calais Rebuilt

A very large area of the old town of Calais, round the harbour and docks, was destroyed during the war. The rebuilding is now practically complete. New streets have been laid out, with shopping centres and residential areas. Although much is in the modern style of architecture, the very fine block of flats that has been built for the fishermen is in a more traditional style. The accompanying picture shows these flats, overlooking a corner of the Bassin du Paradis, where the fishing boats lie.

Interesting features are the cannon that have been thrust into the ground, muzzle downward, to be used as bollards. These are of the Napoleonic era and on the old quayside at Calais have survived two World Wars.

J. MANNERING
(Dover)

A corner of the Fisherman's Basin, Calais. Photograph by J. Mannering, Dover

Fireside Fun

"Would you like to borrow my glasses?"

The house lights were up. The theatre was empty and everyone was preparing to go home when they noticed a woman still sitting in the orchestra. "Why don't you go home?" the manager asked. "The show is over. The hero is dead."

"He was such a nice man," she said. "I thought I'd wait for the funeral."

* * * *

A cinema usherette was in the dentist's chair.

"Now, miss," asked the dentist, "which tooth is giving you all the trouble?"

"Second from the left in the balcony."

* * * *

First Pelican: "That's a fine fish you have there."
Second Pelican: "Well, it fills the bill . . ."

* * * *

"When is the best time to catch soft water?"

"When it is raining hard."

* * * *

"You know this is the fourth time I have had to ask you to return that money I lent you."

"That's nothing. I had to ask you at least a dozen times before you would lend it to me."

* * * *

"How much will you charge to take out this front tooth?"

"Five shillings."

"Oh, well, it doesn't matter; I'll pick a quarrel on the way home."

* * * *

Very young man in barber's shop: "How long will I have to wait for a shave?"

Barber, after close inspection: "Oh, about a year—maybe two."

* * * *

Actor: "So, you're going to use me in your next play? Apparently you have discovered at last my abilities."

Director: "Yes, hurry up and get into the hind legs of that stage horse over there."

An old lady on her way home, on a very dark night, bumped into an old man and both fell to the ground. The old man couldn't apologise enough.

"That's all right," said the old lady, "But will you please tell me which way I was facing before I was knocked down?"

* * * *

In mid-ocean a girl who had been watching a miserable-looking man said to the woman beside her: "Your husband is a very poor sailor, is he not?"

"Certainly not," replied the woman "he's a rich farmer."

* * * *

Dick: "Have you ever met my sister Louisa?"
Tom: "Yes. She's rather stout, isn't she?"
Dick: "I have another at home—Lena."

* * * *

BRAIN TEASERS

THE MOUSE AND THE CORN

A mouse found a box in which there were several ears of corn, which he proceeded to carry off to his hole. He brought out with him three ears on each journey, and altogether he found it necessary to make nine journeys before the box was empty. How many ears of corn were there originally in the box? Be careful—there's a catch in it!

FIVE VOWELS IN A ROW

Tommy had been rude to his teacher and he was very annoyed. "As a punishment for your facetious remarks" the teacher said, "you must stay in after school until you have discovered at least two words in which all the five vowels appear in their correct alphabetical order".

It took Tommy quite a long time to discover two words that filled the teacher's conditions, but he eventually succeeded. See if you can discover them for yourself!

ANSWERS TO LAST MONTH'S PUZZLES

Book Titles

The solutions to the six collections of jumbled letters are as follows: (1) Peter the Whaler, (2) Peter Pan, (3) Robinson Crusoe, (4) Treasure Island, (5) King Solomon's Mines, (6) The Last of the Mohicans.

A Weird Bill

The solution to the bill presented to the man who hired a horse for a day is as follows:

Horse for a day	9/6
Hay for the Horse	2/6
A' shoein' him	3/6
A' taking him home again	6d.
	16/–

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wagon wheels

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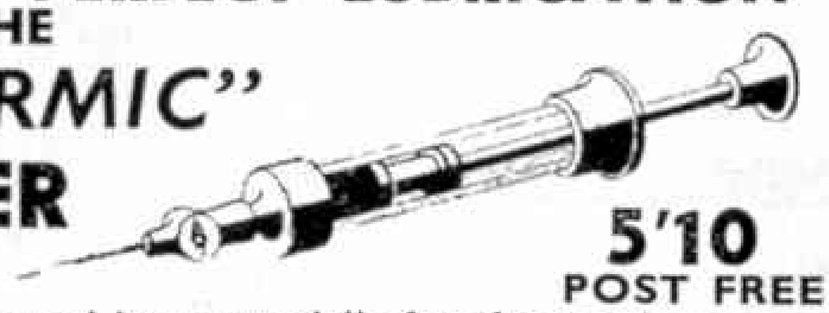

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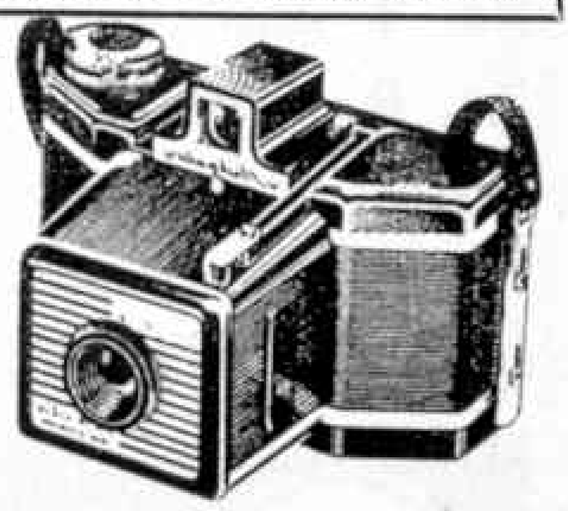

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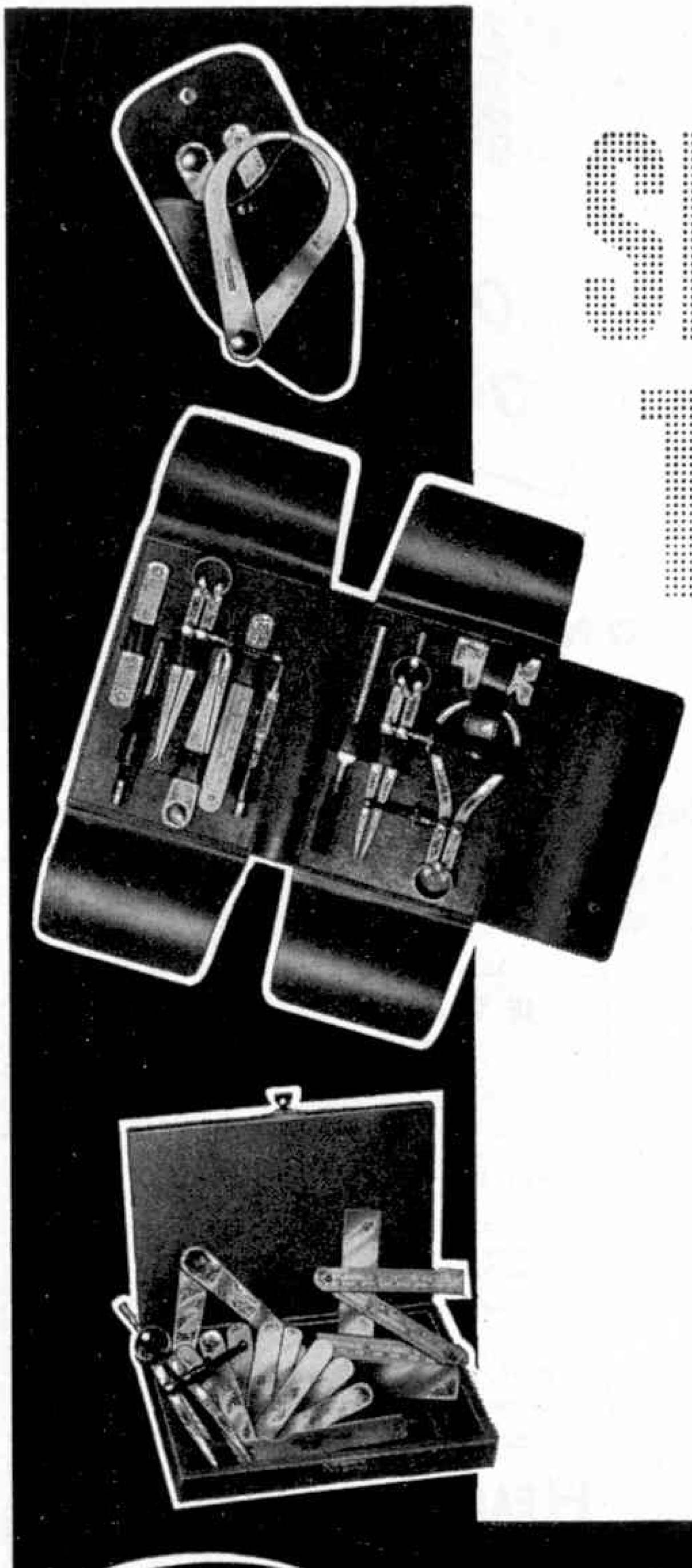

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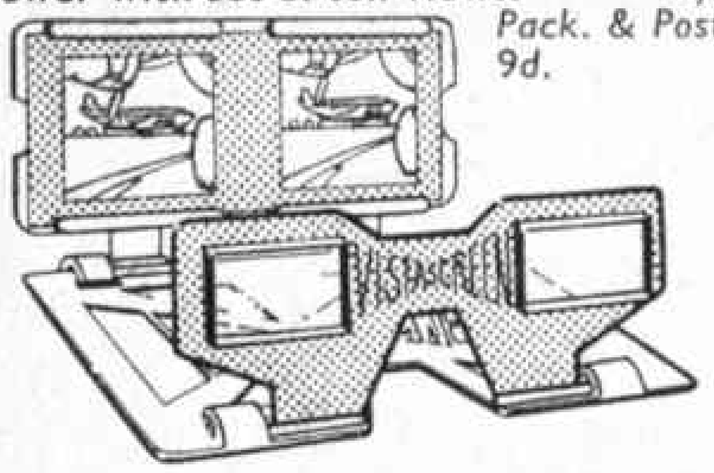

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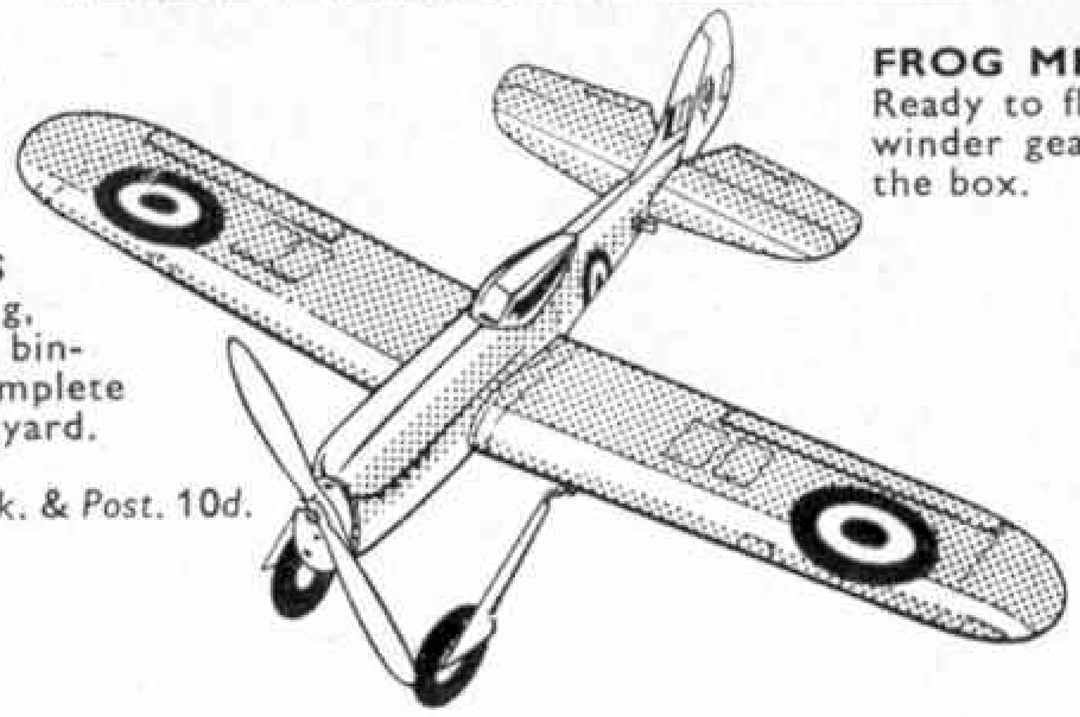

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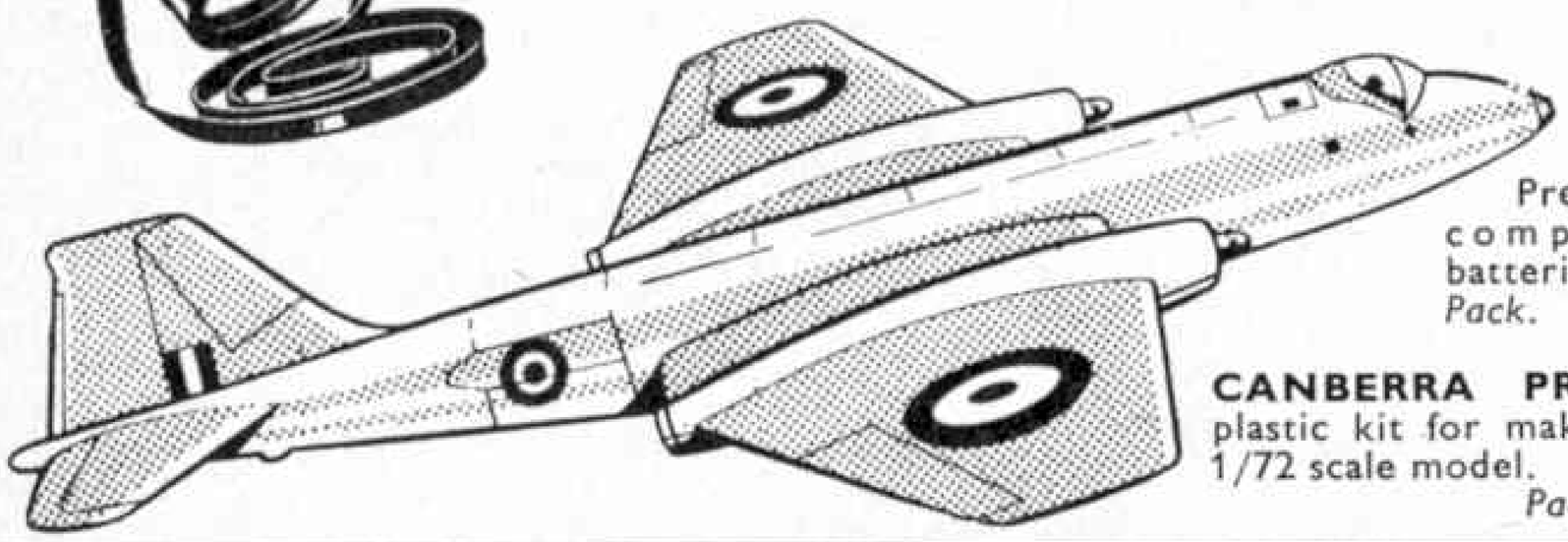

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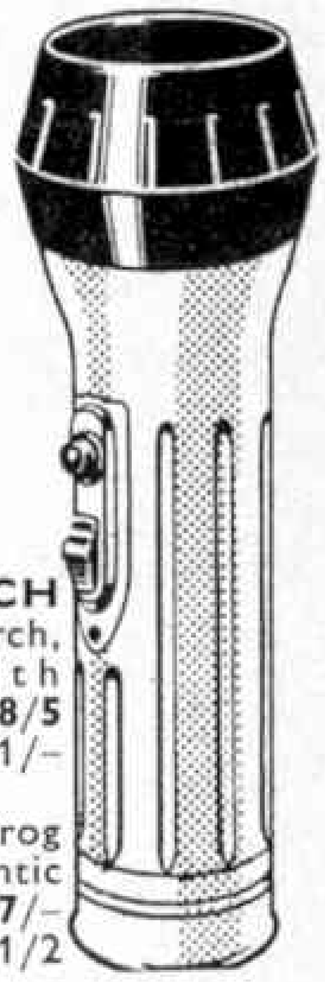

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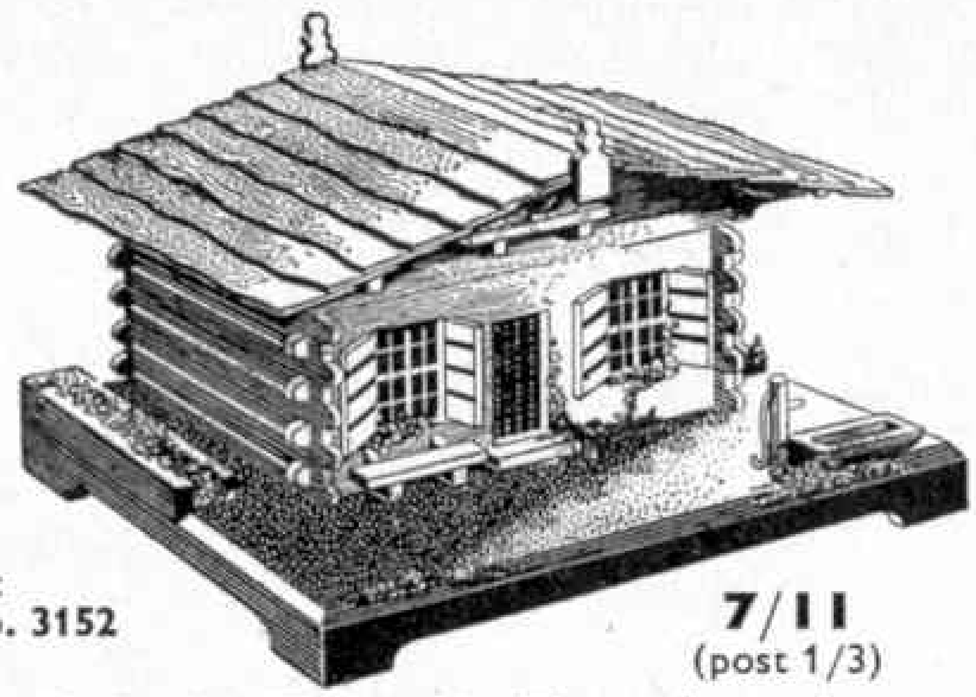

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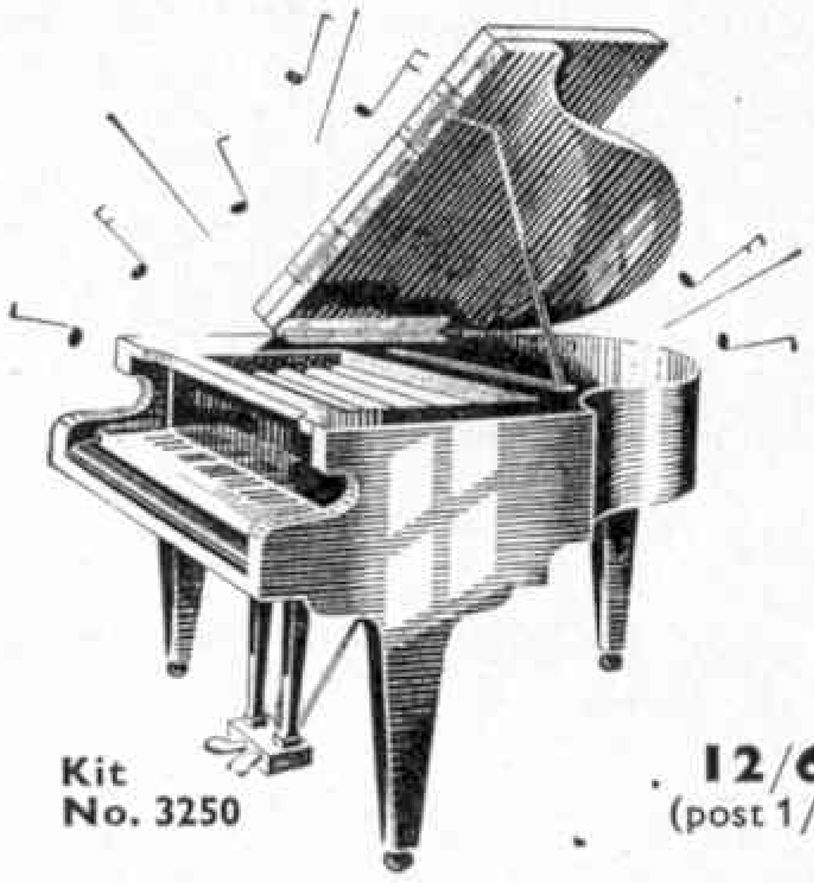

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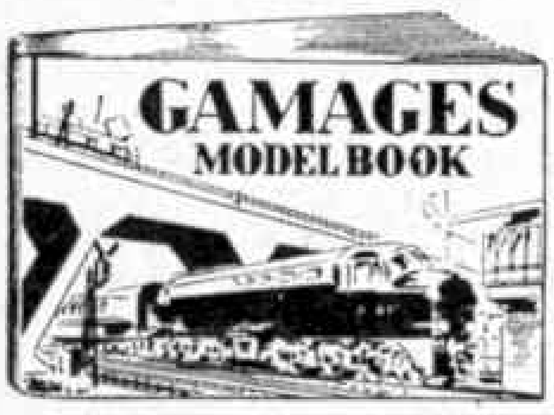

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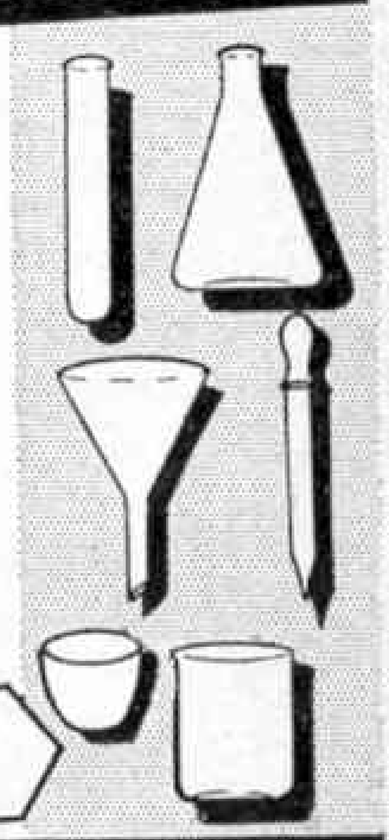

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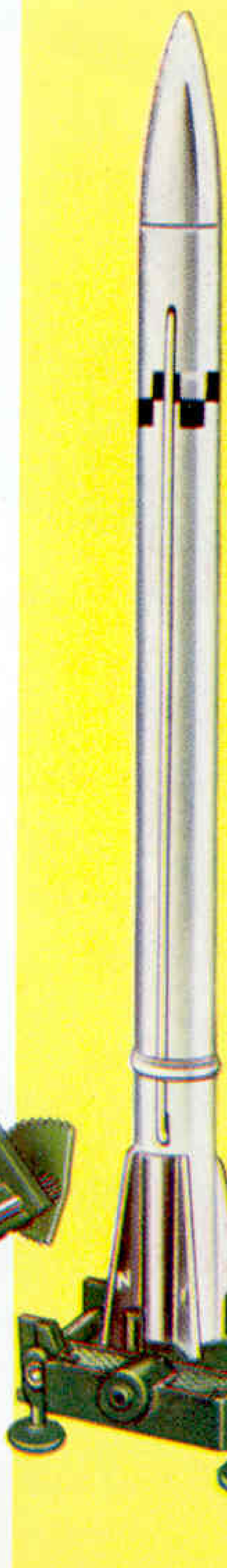
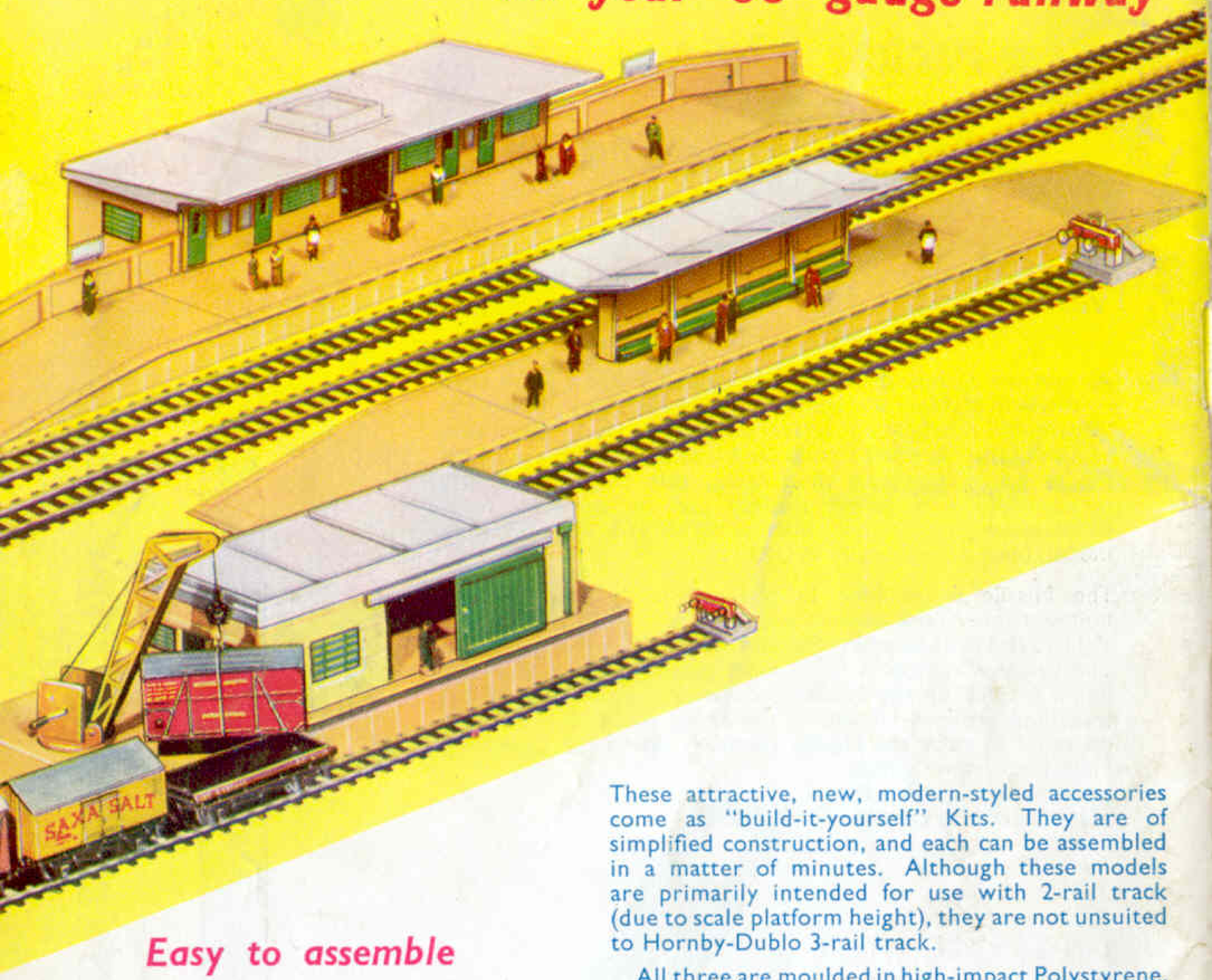


A Realistic Model that actually WORKS

NEW '5-Minute' ACCESSORY KITS

for your '00' gauge railway



Easy to assemble
Easy to dismantle
Can be made permanent if desired

These attractive, new, modern-styled accessories come as "build-it-yourself" Kits. They are of simplified construction, and each can be assembled in a matter of minutes. Although these models are primarily intended for use with 2-rail track (due to scale platform height), they are not unsuited to Hornby-Dublo 3-rail track.

All three are moulded in high-impact Polystyrene. The Goods Depot is fitted with sliding doors, and the crane, which lifts and swivels, is of metal construction.

These fine Kits are with your dealer NOW.

Standard lengths of platform and fencing are available, to extend the Suburban Station and Island Platform to any desired lengths.

5020 Goods Depot, Moulded Kit
Length 11½ in. U.K. Price **25**/– (inc. tax)

5030 Island Platform, Moulded Kit
Length 23 in. U.K. Price **9**/**11** (inc. tax)

5085 Suburban Station, Moulded Kit
Length 23 in. U.K. Price **22**/**6** (inc. tax)

HORNBY DUBLO
ELECTRIC TRAINS

MADE AND GUARANTEED BY MECCANO LIMITED, BINNS ROAD, LIVERPOOL

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